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WATERFOWL STATUS REPORT 1979

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UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Special Scientific Report—Wildlife No. 246

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WATERFOWL STATUS REPORT 1979

Compiled and edited by
James F. Voelzer
Elizabeth Q. Lauxen
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K. Duane Norman

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
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II

Waterfowl Status Report 1979

Compiled and Edited by

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This report contains information from the 1978–79 midwinter waterfowl survey, the 1979 waterfowl breeding population and production surveys, and the waterfowl harvest surveys for the 1978–79 hunting season. This information was provided by the U.S. Fish and Wildlife Service, the Canadian Wildlife Service, and various cooperating State wildlife conservation agencies. Winter surveys are composed of the midwinter survey reports submitted from each of the four flyways and the midwinter survey covering all of Mexico. The breeding ground surveys section is composed of many individual reports that provide breeding population and production estimates for most waterfowl species within a major portion of their breeding range. The waterfowl harvest survey provides estimates of waterfowl hunting activity and success. Information from surveys of the wintering and breeding populations of waterfowl, coupled with data from the annual harvest survey, are instrumental in developing annual hunting regulations for waterfowl.

Credit has been given to each individual or organization that submitted a report. Although some of the narrative statements have been condensed and a few tables deleted or condensed if they contain data presented elsewhere in this report, the essential information from each report has been retained. The breeding grounds survey strata (Fig. 1) for areas surveyed by Fish and Wildlife Service crews were renumbered in 1974.

Winter Survey

A comprehensive survey of North American waterfowl on their wintering grounds is attempted each January by U.S. Fish and Wildlife Service personnel, assisted in the United States by State conservation departments and private individuals, in Canada by the Canadian Wildlife Service, and in Mexico by the Direccion General de la Fauna Silvestre.

The U.S. winter survey was initiated in 1933 and, for 14 years, was the only source of extensive inventory data relating to waterfowl distribution and abundance. With the development of spring breeding ground surveys, commencing in 1947, less emphasis was placed on the winter survey. It continues, however, to furnish valuable information.

- The winter survey provides the only direct means of monitoring the status of species not covered adequately by the spring surveys, such as the black duck (*Anas rubripes*) and brant (*Branta bernicla*).
- Winter survey data complement data from the spring surveys for important but less abundant species such as the redhead (*Aythya americana*) and canvasback (*A. valisineria*).
- It helps define the distribution and species composition of wintering flocks. Long-term data give insight into changes in migration patterns and wintering areas.
- Data are frequently used in land acquisition and refuge decisions. It can be argued that waterfowl use is a good indicator of the value of an area.
- Survey data support continuing research efforts by providing an indication of waterfowl distribution and relative abundance.
- Winter survey data are often used in the preparation of environmental impact assessments. The Mexican winter surveys began in the early 1950's and were run annually through 1965, with the exception of 1957. From 1965 through 1976, complete surveys were attempted only once every 5 years. Only black brant (*Branta bernicla nigricans*) habitat on the west coast was surveyed each year from 1965 to 1976. Since 1977, however, complete surveys have been conducted each year. Winter survey data appear in Tables A-1, A-2, and A-3.

The following are summaries of survey reports from the various flyways and Mexico.

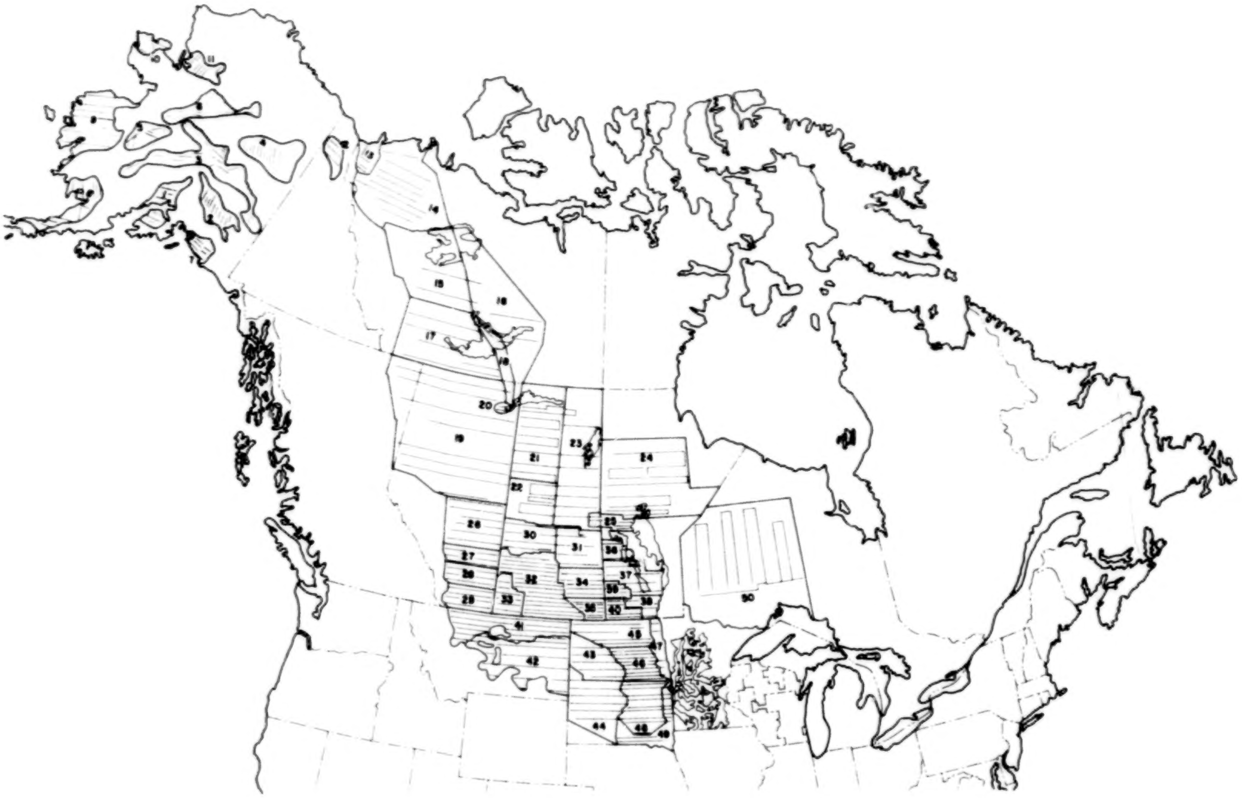

Fig. 1. Transects and strata for aerial waterfowl breeding population and production surveys.

Pacific Flyway

Data supplied by James C. Bartonek
U.S. Fish and Wildlife Service

The annual winter waterfowl survey was scheduled for 2–8 January 1979 but was accomplished during 1–24 January. The west coast of Mexico was surveyed during 11–21 January.

Unusually cold weather during December, coupled with persistent and sometimes deep snow cover, greatly reduced the habitats available to waterfowl in much of Montana, Wyoming, Idaho, Washington, Oregon, Utah, and Colorado. The reduced habitat prompted an atypical departure of birds from these areas before the survey period. In Nevada, habitat conditions continued to improve as water returned to the drought-stricken wetlands, and duck numbers were above those of recent years. In California, waterfowl were scattered because of an abundance of habitat created by rainfall and runoff during the survey period. Storms with rain and fog in the Central Valley prevented coverage from Chico to Red Bluff and in the Sierra Foothills from Modesto to Fresno which are mainly goose areas.

Data for the seven western States entirely within the flyway are compared with those from the previous year's survey. Border States are not included because this reporting did not distinguish between Pacific and Central flyways, and Wyoming did not conduct a survey. Generally, there was comparable coverage for all States, including California, where efforts in 1978 were affected by dispersal because of rain throughout January. Comparability of 1978 and 1979 surveys with other years, especially for California, may not be valid.

Although the total duck numbers in 1979 differed little from last year (–5%) and the 10-year mean (–5%), there appeared to be continuing decreases in mallards (*Anas platyrhynchos*) when compared with last year (–18%) and the 10-year mean (–31%). Except for snow geese (*Chen caerulescens*), which showed little change from last year, most goose species showed decreases from last year and from the 10-year mean. This decrease could partly be attributed to incomplete survey coverage of the Central Valley of California, but other data suggest a real decline. By species, white-fronted (*Anser albifrons*), Canada (*Branta canadensis*), and cackling geese (*Branta canadensis minima*) declined 67, 15, and 30%, respectively, from 1978. Also, brant decreased 53% from the 1978 survey and 9% from the 25-year mean.

Total participation for 10 States and the west coast of Mexico included 105 personnel, 24 aircraft, and 47 autos covering nearly 56,400 km.

Central Flyway

Data supplied by Harvey W. Miller
U.S. Fish and Wildlife Service

Surveys of geese were conducted 11–15 December 1978, except in Texas where fog and rain delayed completion until 19 December. There were no reports of changes from the methods used or areas covered in 1977. Survey results in Colorado, and perhaps other areas, may have been affected by extensive snow cover and low temperatures that altered feeding patterns and possibly caused some geese to shift to other areas for the winter.

Surveys of ducks, coots, swans, and eagles were scheduled during 2–6 January 1979. Inclement weather delayed completion of the survey until 12 January in Wyoming and 13 January in Texas. Below normal temperatures prevailed in all States before and during the surveys. Open-water areas were considerably restricted in all States; even the Texas coast had some ice. Prolonged, extensive, and deep snow cover made waste grains unavailable in much of Nebraska, Colorado, and States to the north, and could have affected the survey results by altering feeding habits or causing ducks to shift to other areas. The 1978–79 estimates do not include about 15,000 waterfowl observed on areas not previously surveyed.

Information on ducks, coots, swans, and eagles was compiled from summaries of surveys in each State. Detailed records are available only in the respective States. Information on geese is from special surveys coordinated by the Central Flyway Waterfowl Technical Committee, which maintains the detailed records of those surveys.

Survey participation by various agencies included 53 Service and 167 State personnel. Twenty-seven aircraft flew 241 h over 28,481 km, and surface vehicles covered 27,780 km.

Total waterfowl estimates indicated an 11% increase over 1978. Dabbling ducks increased 35% from 1978 and 15% over the 10-year mean. Mallards decreased 29% from the 1978 survey and the mean. Pintail (*Anas acuta*) counts were 215% above last year and 68% above the mean.

Diver estimates were down 31% from those of last year and 38% below the 10-year mean. Redheads declined 40% from 1978 and 47% from the mean, which was the largest numerical decrease in divers. Scaup (*Aythya marila* and *A. affinis*) showed a 45% decline from last year and a 63% decrease from the mean. Canvasback counts were up 35% from 1978 and 233% from the 10-year mean.

Counts were down for all three species of geese in this flyway compared with 1978, but all remained above the 5-year mean. Total geese were 30% below last year and 4% above the mean.

Swan (*Cygnus columbianus*) numbers were relatively unchanged, and coots (*Fulica americana*) increased 35% over 1978.

Mississippi Flyway

Data supplied by Kenneth E. Gamble
U.S. Fish and Wildlife Service

The 1979 survey was scheduled for 2–6 January. Surveys in Region 3 and Region 6 States were conducted during the prescribed period, except for portions of Minnesota, which were surveyed 20–21 January, and parts of Michigan, which were surveyed 9 January. Most of the area was covered with snow and ice during the survey period.

In Region 4 temperatures were well below freezing, and many areas in Arkansas, Tennessee, and Kentucky were frozen. Due to mechanical problems, some survey units in Mississippi were not surveyed. The survey in Louisiana was conducted during 16–22 January. Major lakes and bays in southeast Louisiana and most areas north of Interstate Highway 10 in western Louisiana were not surveyed. Large numbers of mallards in flooded timber in northeast Louisiana made counting difficult. Mallards, pintails, and Canada geese were observed feeding in dry soybean fields in northeast Louisiana.

Participation by various agencies in the flyway totaled 487 individuals. Forty-three aircraft, 317 automobiles, and 25 boats were used to cover 58,802 km. This is a decrease of 19% fom the 1976 effort, but compares favorably with the surveys of other years.

Increases in estimates of dabbling ducks compared with 1978 were noted in all species except black ducks and northern shoveler (*A. clypeata*). However, when compared with the 10-year mean, all species decreased except mallard and pintail. Total dabblers increased 20% over 1978 but fell 17% below the 10-year average.

Total diving ducks increased from 1978 (+236%) and the 10-year mean (+19%). These increases were mainly the result of a scaup index that was 460% above 1978 and 22% above the 10-year mean.

Total ducks showed a 36% increase over the 1978 survey but decreased 11% from the mean. Total geese decreased 27% from last year, led mainly by a 35% decline in snow geese. Canada and white-fronted geese were also below the 1978 count, but both remained above the 10-year mean. Coots declined 48% from 1978 and 56% from the mean.

Atlantic Flyway

Data supplied by Warren W. Blandin
U.S. Fish and Wildlife Service

Nearly half the survey flights were made in the week following the survey dates (2–6 January) because of unfavorable weather conditions or mechanical problems. The latest survey was flown on 19 January in New York. Generally mild weather in the weeks preceding the survey left more water open than in the 2 previous years, but cold, windy days were prevalent during the survey period. Food availability was generally good.

Total waterfowl numbers were 5% above the 1978 level but were 1% below the 10-year mean. Diving ducks, sea ducks, geese, and swans all showed increases compared with the 1978 survey results. However, a substantial decrease in redheads was noted (93,646 vs. 147,649); canvasbacks showed a 23% increase. The diving ducks as a group were below the 10-year mean (−4%), whereas sea ducks were 10% above the 10-year mean; eiders accounted for 63% of the sea duck total. Total duck estimates increased 6% compared with 1978 but were 3% below the 10-year mean.

Goose populations continued to increase in the flyway (+2% compared with 1978), but increases in snow goose (*Chen caerulescens*) estimates were countered by slight declines in Canada goose and brant (*Branta bernicla*) estimates (−1% and −6%, respectively, compared with 1978 estimates). The brant, still at very low numbers, were 53% below the 10-year mean.

Puddle ducks declined 6% below the 1978 estimates and were 5% below the 10-year mean. Black ducks were 12% below last year's estimate and 13% below the 10-year mean. Although a substantial increase in green-winged teal (*Anas crecca carolinensis*) was noted compared with 1978 (+24%), the species is 21% below the 10-year mean. American wigeon (*Anas americana*) estimates for both periods also were substantially reduced.

Of particular interest was the welfare of the New Jersey-wintering Atlantic brant, which were so drastically reduced in numbers during the 1977 winter starvation period (about 80,000 birds lost). Sea lettuce was present in great quantities this year and brant remained in excellent physical condition throughout January. Ice coverage created by a severe cold spell in February had little effect on the brant. Because of their excellent physical condition, the birds (about 30,000) responded by moving south into Chincoteague and Sinetaxent bays in Virginia and Maryland where they remained until early March.

Mexico – East Coast–Rio Grande Delta to Northeastern Yucatan

Data supplied by Arthur Brazda and William Larned
U.S. Fish and Wildlife Service

The waterfowl survey of the east coast of Mexico covered the area from the Rio Grande Delta at Matamoras, State of Tamaulipas (near Brownsville, Texas), to Isla Holbox, located on the northeast tip of the State of Yucatan. The adequate habitat conditions were similar to January 1978, though somewhat drier in a portion of the Rio Grande Delta and in the northern part of the Laguna Madre–Tamaulipas Lagoons unit. Total ducks were up 23% over 1978; dabblers were 63% higher and divers 29% lower. The large number of dabblers was due primarily to the increase in blue-winged teal (+102%), whereas the decrease in divers was the result of substantial drops in redheads (−26%) and lesser scaup (−35%). The Laguna Madre–Tamaulipas Lagoons, Tabasco Lagoons, and the Campeche–Yucatan Lagoons were responsible for 71% of the ducks observed. Total geese increased 36% over 1978; 92% (49,435) were observed in the Rio Grande Delta.

Mexico – Interior Highlands and Lower West Coast

Data supplied by Douglas Benning and Rossalius Hanson
U.S. Fish and Wildlife Service

The winter waterfowl survey of the Mexico interior highlands and the lower west coast was conducted during 10–22 January 1979. This year's survey was complete and comparable to the 1978 survey. The expanded coverage for Mexican ducks was continued in 1979. Waterfowl habitat was almost normal throughout most of the survey regions; however, above-normal water levels prevailed throughout much of the north central highlands. Overall duck estimates fell below those of 1978 in the interior highlands (−35%) and along the lower west coast (−76%). The Mexican duck estimate was down 36% from 1978. Snow geese were up slightly (+7%) but white-fronted geese were down (23%). Survey data from the Lower West Coast is included in the West Coast totals in Table A-3.

West Coast and Baja California

Data supplied by K. Duane Norman and Bruce Conant
U.S. Fish and Wildlife Service

The survey this year was initiated on 11 January 1979 and was completed on 21 January. The areas surveyed were identical to those surveyed during the last 2 years. A total of 11,755 km were flown in 47:55 hours during the 11-day period. No major changes in waterfowl habitat were observed on the west mainland coast or the west Baja coast since last year. Because of the abnormal rainfall since last fall, many new water areas existed between Guaymas and El Dorado on the mainland and on the west side of Baja; however, waterfowl were not attracted to these water areas. Dabblers decreased (−19%) from 1978, as did the divers (−23%). Total ducks decreased 19% from 1978. Greatest increases in numbers from 1978 were in the scoters, *Melanitta* spp. (+151%), black-bellied whistling duck, *Dendrocygna a. autumnalis* (+107%), wigeon (+10%), and bufflehead, *Bucephala albeola* (+13%). Canada geese, absent for several years, were again observed on the Colorado River delta area. White-fronted geese increased (+77%) from 1978, as did snow geese (+21%). Brant were less numerous in the Tiberon unit, but more than normal numbers were found in the Obregon and Agiabampo units. Brant numbers were lower than 1978 on Baja; San Quintin had the greatest decrease. Overall, brant numbers decreased 16% from 1978. A decrease is indicated for the mainland (−12%) and for Baja (−18%) since 1978.

Breeding Ground Survey

Aerial surveys of waterfowl breeding populations and production were developed in the late 1940's by the U.S. Fish and Wildlife Service to monitor the status of habitat and waterfowl, primarily ducks, over a large portion of their breeding grounds in North America. Annual information in this regard is essential for effective management of this resource. Waterfowl population and habitat changes are currently surveyed over about 3.4 million km² of breeding habitat within portions of Alaska, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, the Northwest Territories, the Dakotas, and Montana.

In addition to the Service's annual breeding ground survey, a number of States conduct a similar survey. State reports that have been submitted to the Service are incorporated herein.

Beginning in 1973, the Waterfowl Status Report reflected only the current year's data for Service-conducted surveys. Breeding population survey tables also have been changed to reflect adjustment for visibility bias. All reports before 1973 reflect unadjusted figures. The historical production survey data (1955–71) are available in *Special Scientific Report – Wildlife* 160 (1972). Data for the 1972–78 production surveys are presented in the respective years' status reports. Procedures followed in conducting the breeding ground surveys are established in the Service's standard operating procedures for aerial waterfowl breeding ground population and habitat surveys (1977).

Alaska and the Yukon Territory

Data supplied by James G. King and Bruce Conant
U.S. Fish and Wildlife Service

Spring Weather and Habitat Conditions

As in 1978, all of Alaska from Ketchikan to Barrow, and Old Crow Flats enjoyed an early spring. This reduces stress on early migrants, and large clutch sizes can be expected. No lingering ice was encountered except on the Seward Peninsula and on Old Crow Flats. Emergent grasses were as much as 30 cm high, even on the Yukon Delta, which may have provided unusual cover for dabbling ducks and accounted for part of the indicated decrease. Heavy snow brought water levels up in closed basin ponds, and several rivers (the Innoko, Dalbi, and Atchueelinguk) were still over their banks at survey time. Chris Dau reported from Clarence Rhode Refuge that a 10 June storm surge tide inundated perhaps 25% of brant nests there. Otherwise, weather and habitat conditions over the entire area appeared optimum. Dirk Derksen reported early conditions on the North Slope and an apparent increase in black brant nests over the past several years.

Breeding Populations (Table B-1)

A return to normal breeding population averages for dabbling ducks in the north is not unexpected, as habitat conditions in the Prairie strata return to normal after drought periods. This year's figures could be slightly biased to the low side due to the early development of emergent grasses in pond margins.

Survey results for dabblers indicate a decrease from 1978 for all species. Notable among them are mallards (−13%), American wigeon (−15%), green-winged teal (−8%), northern shoveler (−50%), and pintail (−26%). Total dabblers were down 22% from 1978.

All diving ducks showed an increase over 1978 except scaup and oldsquaw (*Clangula hyemalis*), possibly reflecting good production last year. The decrease in scaup (−9%), however, was substantial enough to cause a 2% decrease in total divers. Miscellaneous ducks decreased 16% compared with 1978, and total ducks also decreased 16% from last year.

Compared with the 10-year mean, dabblers increased 1%, divers showed no change, miscellaneous ducks increased 14%, and total ducks increased 3%.

Favorable nesting conditions were reported for geese on the Yukon Delta. Most nesting efforts were comparable to last year's, except for white-fronted geese, which seem to be disappearing from previously occupied habitats. Concern for the Pacific Flyway white-fronted geese is growing throughout their range, as indications of a population decline mount. Tidal flooding caused some damage to coastal nests of black brant, emperor geese (*Anser canagica*), and white-fronted geese for the second year in a row. Black brant were down 16% in the 1978–79 winter inventory following a nesting season that seems to be identical to the 1979 effort, including tidal flooding.

Northern Alberta, Northeastern British Columbia, and the Northwest Territories

Data supplied by Morton M. Smith, K. Duane Norman, and Carey S. Smith
U.S. Fish and Wildlife Service
and
Vernon D. Stotts, Maryland Wildlife Administration

Spring Weather and Habitat Conditions

The winter of 1978-79 was very cold throughout the survey area of northern Alberta, northeastern British Columbia, and the Northwest Territories (all hereafter termed the NWT). The low temperatures and less than average snow cover in some areas resulted in a heavy ice cover on lakes and rivers. Spring was cold and late in the

NWT, except in the lower (northern) Mackenzie Valley. In southern and eastern portions of the unit, 1979 was the latest spring in our survey experience. In the northern strata, however, much less ice was encountered this year than during the spring of 1978. The season in the northernmost areas in 1979 was considered normal to early.

Breeding Populations (Table B-2)

Total duck numbers in the NWT were 24% above those recorded in 1978 and 30% above the 10-year mean. A small decline (−5%) in dabbling duck numbers in 1979 was more than offset by increases in diving ducks (+26%), and a large increase (+79%) in the miscellaneous group was made up largely of sea ducks.

Among dabbling ducks, mallard numbers in 1979 increased 14% over 1978, and were 11% above the long-term mean. The numerically important wigeon decreased 26% from 1978 levels and were 9% below the 10-year mean. Green-winged teal showed little change in numbers (−5%) from 1978 but remained above (+40%) the 10-year mean. Scaup are the most numerous duck in the unit, and current numbers were 33% above 1978 and 15% above the 10-year average. Bufflehead (*Bucephala albeola*) numbers changed little from 1978, whereas ring-necked ducks (*Aythya collaris*) declined. Redheads and canvasbacks occur infrequently in the survey unit, and our estimates of their populations have wide confidence limits.

Large increases were recorded in sea duck numbers, primarily as a result of a great increase in oldsquaw (248% above 1978 and 182% above the 10-year mean). Scoters increased 17% above 1978 and were 50% above the 10-year mean. Mergansers (*Mergus serrator* and *M. merganser americanus*) decreased from 1978 but were double the mean levels.

Coot numbers were very low in the survey area in 1979. Geese are recorded when encountered, but our surveys are not designed to measure the breeding populations of these birds.

Northern Saskatchewan, Northern Manitoba, and the Saskatchewan River Delta

Data supplied by Arthur R. Brazda, James R. Goldsberry, William E. Larned, and Al Novara
U.S. Fish and Wildlife Service

Spring Weather and Habitat Conditions

Habitat conditions can be summed up as good to excellent in all areas except the southwest portion of the survey area. In the southwest, both stations closely associated with this unit, Cold Lake and Meadow Lake, reported below normal or near normal precipitation levels for the period 1 August 1978–31 May 1979 (Cold Lake −39% and Meadow Lake −0.4%). It should also be noted that precipitation at both of these stations was below normal for the period 1 November 1978–31 May 1979.

Spring was at least 2 weeks later than normal in all strata. Actually, it appeared to be considerably later than indicated because of the persistent heavy ice conditions on the larger or deeper lakes, even in the more southern strata. However, when conditions progressed enough for initiation of the survey, breeding activity was well along, and only the scaup appeared to be abnormally bunched up. Ice still remained on most of the larger lakes to the north, and vegetative development of the dwarf birch, willow, and aspen was almost nil until the last week of the survey. In northern Manitoba, winter conditions remained until late May. However, the chronology of mating activities was close to normal; in fact, Canada geese appeared to be ahead of the previous year, though no broods were observed.

Breeding Populations (Table B-3)

It appears that the more lucrative habitat conditions in the prairies in 1979 short-stopped some of the waterfowl possibly destined for the breeding areas farther north, although there was inconsistency in the pattern by species. For example, mallards decreased markedly from 1978 in Strata 22, 23, and 25, dropped only 6% in Stratum 21, and went up 15% in Stratum 24. Wigeon increased slightly in Strata 21 and 22 and indicated decreases in the remaining three strata. On the other hand, both species of teal dropped in all strata. Overall, dabbling ducks decreased 25% from the previous year but remained 8% above the 10-year mean. Divers increased 15% and 12%, respectively. However, of the major diving duck species, only the lesser scaup indicated an increase. There was reason to believe that this increase was in error and was directly the result of the slow disappearance of the ice conditions farther north. The miscellaneous duck category decreased 41% from 1978 and was 2% below the 10-year mean. Canada geese were 26% below the previous year, and 109% higher than the long-term mean.

In the dabblers, mallards were 13% below 1978 and 12% above the 10-year mean; pintails, −59% and −53%, respectively; green-winged teal, −27% and +77%; blue-winged teal (*Anas discors*), −48% and −33%; American wigeon, −24% and −13%; gadwall (*Anas strepera*), −29% and −45%; and shovelers, −44% and −48%.

Important diving ducks fared as follows: redheads were down 43% from the previous year and were down 61% from the 10-year mean; canvasbacks, −39% and −52%, respectively; scaup, +52% and +47%; ringnecked ducks, −35% and −34%; goldeneyes (*Bucephala clangula americana*), −28% and −43%; and buffleheads, −2% and +26%.

In the miscellaneous ducks, ruddy ducks (*Oxyura jamaicensis rubida*) decreased 50% from last year and were down 46% from the mean; mergansers, −46% and −3%, respectively; and scoters, −5% and +14%.

Canada geese were again observed in all strata and indicated a 26% decrease from 1978, but they remained 109% above the 10-year mean. Coots were down substantially, 64% and 67%, respectively.

Summer Weather and Habitat Conditions

The extremely long, cold winter was responsible for one of the latest ice breakups on record. Consequently, the spring season was about 3 weeks later than normal, resulting in very late nesting activities. Except for the Meadow Lake region, Stratum 22 rainfall was adequate in May and the first half of June. The remainder of June and all of July were dry in the North, and the northern portions of Strata 21 and 23 were subjected to numerous forest fires.

In the four strata surveyed during the production survey, the Meadow Lake portion of Stratum 22 continued to be dry and habitat conditions were only fair to poor.

In Strata 23, 25, and the southern half of Stratum 24, habitat conditions were good. However, the northern half of Stratum 24 had high water levels, and nest destruction due to flooding appeared to have been a serious problem. As a result, the incidence of flocked mallard females was frequent. Groups of 5 to 15 mallard hens were observed on several occasions.

Production (Table B-3)

The duck brood index for the four northern strata, 22-25, was 95,000. Stratum 21 was deleted because of survey time limitations. When comparing like strata, these data indicate an 8% increase over 1978; however, a 30% decrease was indicated for 1979 from the 10-year mean.

Except for Stratum 25, scaup and ring-necked duck broods were just becoming evident at the conclusion of the survey. Several Class I dabbler broods were also observed during the last few survey days. Of 193 identified broods in 1979, 117 (60%) were Class I. This compares with 47% in 1978 and 28% in 1977. These data support inferences made concerning the tardiness of the nesting season.

The Class II and III average brood size of 4.3 was the lowest recorded in the past 13 years, which is the time span for which comparative data are available. When comparing like strata, the brood size of 4.3 is 14% below 1978 and 23% below the long-term mean. In two strata, the average brood size was less than 4.0 ducklings (Stratum 23, 3.6 and Stratum 24, 3.9). It appears that many of the Class II and III dabbler broods observed were definitely victims of the cold, late spring.

The coot brood index for the comparable strata was 4,000, which is a 33% decrease from the previous year and −67% from the mean.

The number of Canada goose broods was low. Only two broods were observed in Stratum 22 and one in Stratum 23.

Considering only comparable strata, the mallard late nesting index (LNI) was 61% above 1978 and 138% above the 10-year mean. For all remaining dabblers, the LNI decreased 19% from 1978 and 29% from the mean. Collectively, divers were 68% above the previous year and 9% above the 10-year mean. The true value of the LNI is unknown. In these strata, the value of the LNI has to decrease markedly and should be given only minor consideration.

Southern Alberta

Data supplied by K. Duane Norman and Carey S. Smith
U.S. Fish and Wildlife Service

Spring Weather and Habitat Conditions

In stratum 29, waterfowl habitat was extremely abundant from the U.S. border north to a line between Lethbridge and Medicine Hat. North of this line the habitat became much drier. Temporary water areas had dried, but the more permanent wetlands had adequate water. The pond index in this stratum was 22% below 1978 but was still 18% above the mean.

In stratum 28, the grasslands east and northeast of McGregor Lake were dry. It was also dry south and east of Tilley, but the Ducks Unlimited island complex and projects contained adequate water levels. The habitat east of Calgary was about normal. Crowfoot Creek again contained excellent habitat. The Empress–Oyen area was fairly dry. The data indicated a 15% decrease in ponds from 1978 and a 30% decrease from the mean.

Northward to stratum 27, water conditions were good east of the Wintering Hills, but a high percentage of the available water was temporary. West of the Hills, the habitat became dry. South of Olds, the wetlands were slightly better than normal. Ponds in the Sandhills contained adequate water in 1979. The Bullpound drainage had good habitat and changed little from 1978. Type III wetlands were abundant from Hanna to Youngstown. Sounding Creek east and west of the reservoir contained good nesting habitat, but that near the Saskatchewan border was much poorer than in 1978. The area between Grassy Island Lake, which was dry again in 1979, and Kirkpatrick Lake was much drier than in 1978. The Chain Lakes and Farrell Lake again had water, but the levels were low. The knob and kettle habitat north of Three Hills contained excellent water. There was definitely more habitat available there than there were ducks. The pond index showed a slight increase of 3% from 1978 but a 42% deficit from the mean.

In stratum 26, wetlands for the most part have almost fully recovered from the drought between Rocky Mountain House and Stettler. The wetlands near Coronation were good, but water levels were low. Sounding Lake was drier in 1979 than it was in 1978. The area east of Buffalo Lake and the sandhills south of Wainwright had good habitat – the best in many years. The Viking Moraine usually contains good habitat; 1979 was no exception, and water levels were well into the woody vegetation. Much of the available water east of Vegerville was of a temporary nature but became good northwest and north of Vermillion. The pond index in this stratum had increased 55% from 1978 but was still 18% below the mean.

Overall, the pond index was 19% above 1978, primarily because of the substantial increase in water in stratum 26, but was still 20% below the mean.

Breeding Population (Table B-4)

Results of the 1979 survey indicated a measured improvement in total ducks from 1978; the index was only 7% below the mean. Puddle ducks showed the greatest increases (+26%) from 1978 but were still about 11% below the mean. The divers, influenced heavily by scaup, showed a 16% increase from 1978 and an increase (+24%) from the mean.

Of the puddle ducks, blue-winged teal (+51%) and pintail (+34%) showed substantial increases from 1978. Moderate increases were indicated for gadwall (+24%), wigeon (+33%), mallard (+19%), and green-winged teal (+16%). Shovelers showed a decrease of 4% from 1978.

Of the divers, only scaup (+48%), bufflehead (+11%), and scoter (+39%) showed population increases from 1978. Goldeneye numbers decreased (−77%), as did mergansers (−65%), ring-necked duck (−58%), ruddy duck (−52%), canvasback (−39%), and redhead (−25%) from 1978.

Coots increased 148% from 1978 and are 25% above the mean.

Canada geese were still on the increase in southern Alberta, and showed a 22% increase from 1978 and a 34% increase from the mean.

A look at the 10-year mean revealed that only wigeon (+2%), pintail (+7%), scaup (+56%), bufflehead (+57%), and scoter (+120%) populations were above the mean. All other species showed various decreases. Those which were significant were mallard (−31%), blue-winged teal (−18%), redhead (−37%), and canvasback (−32%).

Summer Weather and Habitat Conditions

Temperatures during May averaged from 1 to 2° below normal throughout most of Alberta. The first and last weeks in particular were colder than normal, and several record daily minimums were recorded at a number of stations. Late frosts were fairly widespread during the last days of the month. In spite of the cool, unsettled conditions, the amount of precipitation received was near normal throughout the Province. Above normal snowfall occurred along the foothills from Pincher Creek to Whitecourt and north of a line extending from Fort St. John to Grand Prairie, Whitecourt, and Coronation to Medicine Hat.

Temperatures during June were nearly normal throughout most of Alberta. Early June was unseasonably cool; a number of stations established new record daily minimums. By mid-June, however, temperatures had recovered and by the end of the month, new daily maximums were being recorded in the central and northern areas of Alberta. Total rainfall during the month ranged from 15 mm at Lethbridge to 160 mm near Whitecourt. The Edson–Whitecourt–Slave Lake area was the wettest region in the Province during June. Northeastern Alberta and the southern grasslands were considerably drier than normal. Rainfall elsewhere was variable and depended upon the frequency and intensity of the thunderstorms. The lack of rain in June (normally the wettest month), coupled with warm dry winds, seriously depleted the surface and soil moisture. Hay and cereal crops suffered because of the lack of adequate moisture.

Pond indexes revealed a 26% decrease in the survey area since May 1979. Greatest losses were indicated in stratum 27 (−42%) followed by stratum 29 (−36%), stratum 26 (−21%), and stratum 28 (−19%). Only stratum 26 showed an increase in water from 1978 (+41%). Slight decreases from average were noted for the survey area, but increases were shown for strata 28 and 29.

Production (Table B-4)

For 1979, the Alberta duck brood index decreased 2% from 1978. The index is still 16% above the mean. Decreases were noted from 1978 in all strata except stratum 29, which increased 59%. The number of broods decreased 21% in stratum 26, 8% in stratum 27, and 8% in stratum 28. The average brood size decreased (−7%) from 1978 to 5.1 ducklings per brood. Coot production increased (+36%) from 1978 in southern Alberta. All of the increase (+83% from 1978) was in stratum 26. Decreases of 29% were indicated in stratum 27, 28% in stratum 28, and 17% in stratum 29.

A look at the brood classification revealed that 44% of the broods in 1979 were Class III, 29% were Class II, 17% were Class I, and 10% were unidentified.

The late-nesting index of 117,100 represented a 7% increase from 1978 and an 18% increase from the mean. Changes of significance from 1978 were found in mallard (−15%), gadwall (+26%), wigeon (+11%), green-winged teal (+66%), blue-winged teal (−29%), and scaup (+36%). Although not of great importance, the index for redhead decreased (−31%) from 1978, whereas canvasback increased (+100%).

Southern Saskatchewan

Data supplied by Douglas Benning, Rosalius C. Hanson,
William Larned, and Albert Novara
U.S. Fish and Wildlife Service

Spring Weather and Habitat Conditions

Total precipitation during September–May was above normal at all stations with the exception of Kindersley, which was slightly below normal.

During the first week in May, snow showers, overcast skies, and temperatures around the freezing level were common. Overnight lows reaching −4° C during the first week of May could have had adverse effects on early nesting attempts. Two widespread snowstorms during the last week in April and the first week in May deposited as much as 15 cm of new snow each in a wide swath oriented north–south through Prince Albert and Moose Jaw south to the U.S. border, extending west to a north–south line through North Battleford and Swift Current, and extending east to a north–south line somewhat east of Regina. This also would have adversely affected early nesting attempts in progress.

Visible vegetative growth was delayed by as much as 2 weeks throughout most of southern Saskatchewan; it was delayed in the southwestern part of the Province to a lesser extent. Visibility of waterfowl during the aerial survey was not affected by leafing of trees and shrubs and the growth of aquatic vegetation.

The May pond count indicated an overall increase of 42% from 1978, with increases of substantial proportion in strata 30, 31, 32, and 35. Compared to the previous 10-year mean, May ponds were 37% above normal, and increases were indicated in all strata.

Upland nesting cover was in short supply as usual in most agricultural areas of southern Saskatchewan in the spring of 1979. Intensive cultivation and increased cattle densities on rangelands in recent years placed unprecedented pressure on prairie-nesting ducks to seek out adequate safe nesting cover which would remain intact long enough to hatch their broods. Spring provided some relief because delayed thaw, late snowstorms, and above-average precipitation in late April and early May caused farmers to delay their cultivation and other farming activities 1 to 2 weeks throughout most of southern Saskatchewan. It was reported that farmers were not going to seed this year because some areas were too wet. Other detrimental activities such as fall–spring burning of stubble and nesting cover adjacent to wetlands, fall haying, and expansion of drainage systems were minimal in 1979 because of unusually wet conditions.

Breeding Populations (Table B-5)

Comparing the 1979 population estimates with those of 1978, total ducks increased 41%; dabblers increased 39%, divers 51%, and other ducks 109%. Of the dabblers, significant increases were indicated for blue-winged teal (+64%), pintail (+64%), northern shoveler (+62%), green-winged teal (+53%), American wigeon (+27%), gadwall (+21%), and mallard (+17%). Among the divers, significant increases were indicated for goldeneye (+154%), canvasback (+118%), scaup (+51%), and redhead (+24%). Significant increases were also indicated for scoters (+372%), mergansers (+100%), and ruddy duck (+98%). The American coot, responding almost predictably to changing water conditions, increased 202%. The Canada goose estimate had an indicated increase of 21%.

Comparing 1979 population estimates with the 1969–78 means, total ducks indicated a 3% increase: dabblers decreased 3%, divers increased 58%, and miscellaneous ducks increased 53%. By species, significant increases were indicated among scoters (+268%), mergansers (+257%), scaup (+97%), goldeneye (+89%), ring-necked duck (+75%), gadwall (+62%), bufflehead (+51%), ruddy duck (+39%), green-winged teal (+38%), and canvasback (+30%). Significant decreases were indicated among pintail (−14%), blue-winged teal (-14%), and mallard (-13%). The American coot increased 56% from the mean. The Canada goose estimate had an indicated increase of 76%.

The lone drake index in 1979 for the mallard, pintail, and canvasback combined was 78.9, which is close to the 1956–78 mean for this survey unit.

Summer Weather and Habitat Conditions

Weather patterns over southern Saskatchewan during late May, June, and early July were hot and dry. This was in sharp contrast to the late spring in 1979, which was generally cool and wet. The lack of normal amounts of precipitation and warm afternoon temperatures spurred by frequent strong surface winds served to reduce surface water rapidly through this period. Temperatures reported at 12 stations around the survey area often exceeded 2 and 3° C above normal during mid-June and early July and precipitation accumulations were below normal amounts received since late May in most areas. In the northwest region of this survey reporting unit (stratum 30), however, accumulated precipitation during this same period was above normal. Precipitation accumulations for the growing season between 1 April and 16 July as reported by these stations were generally below normal in strata 31, 34, and 35, somewhat above normal in stratum 32, and well above normal in stratum 30.

The July pond index, obtained as a part of this survey, indicated an overall 65% decrease in the number of ponds from the comparable index obtained during the May survey. This decrease was substantially greater than the 50% loss experienced in more normal years.

The July pond index was 22% above 1978 but 9% below the previous 10-year mean. Strata 31 and 32 were appreciably drier than normal, whereas all other strata were little changed from the mean.

Upland nesting cover was relatively dense resulting from this year's abundant surface moisture when spring finally arrived in the region. With few local exceptions, crops appeared to be in very good condition across the prairies and mixed prairie-parklands of Saskatchewan during July, and the grasslands of southwest Saskatchewan appeared to be in excellent condition. Overall upland nesting habitat for renesting and late nesting species was better than average. Early nesting was probably adversely affected with the delayed spring. The rapid drying conditions experienced soon after cover growth was established in May provided temporary cover for early nesters on farmlands; however, farmers were in the fields much sooner than expected and destroyed many early nests. Overwater nesters probably suffered from the rapid drying and lowering water levels during June and July. During the survey broods and late-nesting waterfowl were observed in Type IV and V wetlands where good brood cover was found. The probability of successful late hatches was forecast to be good and brood survival high.

Production (Table B-5)

The total brood index for southern Saskatchewan was 18% below 1978 and 28% below the previous 10-year mean. The distribution of broods by age classification in the observed broods was as follows: Class I, 224 (38%); Class II, 188 (33%); Class III, 139 (25%); and unidentified Class, 27 (4%). The average brood size of intact Class II and III broods observed by the survey crew was 5.3 ducklings. This was above the 1978 average brood size of 4.7 and slightly above the 10-year mean of 5.0. The coot brood index was 20% above 1978 and 10% above the 10-year mean.

The late-nesting index, which is a measure of broods yet to hatch after the survey, was about 2.7 times as large as the duck brood index. This index was 50% above that of 1978 and 20% above the previous 10-year mean. Dabblers were up 44% from 1978 and up 6% from the mean. Divers were up 79% from 1978 and 88% above the mean.

Southern Manitoba

Data supplied by William Larned and Albert Novara
U.S. Fish and Wildlife Service

Spring Weather and Habitat Conditions

Above-normal precipitation over the entire survey area and spring temperatures averaging several degrees below normal provided conditions more than adequate to recharge the soil moisture deficit of the past 2 years. This left the ground saturated at the end of May, with most basins full and sheet water still common in fields. In many areas, planting operations had not been initiated by this time. This was particularly true in stratum 38 where heavy flooding of the Red River and tributaries had persisted until about 20 May and in most of the marginal farmlands to the north where a late planting date can mean crop disaster.

Additional agricultural impacts on habitat during 1979 were minimal, probably due to inclement weather. Very little new clearing and burning activity was observed during the survey. However, it must be noted that after the dry year of 1977, and to a lesser extent 1978 which still saw dry soil conditions, there was not much left to be cleared. Extensive draining was attempted during 1979 but filling operations were not common.

Nesting cover, so vitally important in minimizing the effects of predation on waterfowl production, was generally in short supply and poor in quality in Southern Manitoba. However, increased pond numbers and the late starting dates of agricultural activities helped to minimize nest disturbance.

Breeding Populations (Table B-6)

Population estimates of all individual species of dabblers increased significantly from those of 1978, and total dabblers increased 39%. With the exception of teal and shoveler, estimates of all dabblers now equal or exceed the 10-year mean. Mallard estimates increased a substantial 24% from those of 1978 and 2% from the 10-year mean. Gadwall and American wigeon showed increases again during 1979, which put their estimates well above the 10-year means. Blue-winged teal estimates are back up to respectable levels after two low years, and pintail showed sharp increases in all strata, more than doubling their numbers from 1978 and exceeding the 10-year mean by 10%.

Data reveal that the sharp decline in scaup numbers is largely responsible for the 1979 decrease in diving duck totals. Summary data from 1978 and 1979 indicate that observed numbers of scaup drakes and pairs are very similar (280 and 289, respectively) but the large numbers of grouped birds observed in 1978 are missing from the 1979 data (1,093 in 1978 vs. 174 in 1979). It is suspected that these large flocks were transients, and that the late survey starting date in 1979 gave migrant flocks time to move on through the area.

Redhead and canvasback have increased substantially from 1978, although neither has attained average levels. Coot estimates decreased by 35% from those of 1978 and 38% from the 10-year mean. This is surprising in view of the coot's reputation for taking advantage of good water supplies in the prairies.

The weather did not permit survey initiation until 17 May. Lone drake indices coincided almost exactly with the 23-year means for mallard, pintail, and canvasback and seemed to support our starting date, which was nearly 2 weeks later than normal.

Summer Weather and Habitat Conditions

In violent contrast to the cold, wet spring in southern Manitoba, June and July were abnormally hot and dry. Rainfall after May was very spotty, coming almost entirely from widely scattered thunderstorms, and has been below normal nearly everywhere. The six reporting stations within the survey area have reported precipitation from 24 to 62% below normal for the period. Temperatures were unusually high the last half of June, and averaged 4 to 5° C above normal the first 3 weeks of July. These conditions, combined with almost constant dry winds, resulted in a rapid decline in soil moisture and pond levels. July pond estimates indicated an overall decrease of 58% from those of May; stratum 39 suffered the greatest loss (67%). Results still compared favorably with those of 1978 (6% increase) and were only 6% below the 10-year mean. Additional water losses, however, occurred at a rapid rate through the survey period and afterward, and no doubt the situation was worse than the figures showed.

Production (Table B-6)

The duck brood index dropped considerably from that of 1978 (−37%) but remained above the 10-year mean. The mean brood size of 5.2 compared favorably with that of 1978 (+5%) and was essentially unchanged from the mean (−4%). The coot brood indices showed an insignificant 4% decline from both 1978 and mean figures.

In spite of the crew's optimism in May, a predominance of Class I broods in the sample strongly indicated a poor early hatch and brood survival. The unusually cold and wet spring could have caused any or all of the following problems, which in turn could account for this observed result: reduced hatchability of eggs resulting from cooling or freezing; increased mortality rates of newly hatched ducklings due to exposure; a change in normal breeding behavior due to environmental stress; and stress-induced changes in predator behavior. In addition, the rapid and nearly complete disappearance of water in areas where shallow water was abundant in late May may have had a disastrous effect on early broods. Although there are countless variables in any year which can affect waterfowl production, it seems logical to assume that the extreme weather conditions had a strong negative effect on early broods.

The LNI provides a rough measure of broods yet to come. The total LNI of 50,700 represented increases of 18% from that of 1978 and 57% from the 1969–78 mean. This is consistent with the apparently poor early hatch and the relatively large number of young broods observed in July.

Individually, the mallard LNI remained virtually unchanged from 1978 and was 25% above the mean. Gadwall and American wigeon indices increased considerably during both time frames, but those of green-winged teal and pintail decreased significantly from 1978. The total dabbling duck LNI increased 5% from 1978 and 50% from the mean. All diving duck species showed increases from both references; scaup was numerically most important. The LNI for total divers was up 82% from 1978 and 163% from the 10-year mean.

Montana

Data supplied by James F. Voelzer and John Tautin
U.S. Fish and Wildlife Service

Spring Weather and Habitat Conditions

Three factors – above normal precipitation, below normal temperatures, and abundant residual nesting cover – combined to provide prime breeding habitat over the entire survey area. Because of the wet spring, farmers were unable to work their fields in the northwest quadrant of the survey area, and as a result numerous stubble fields with leftover grain served as a generous attraction for a record number of waterfowl. Our prime concern was that continued low temperatures might retard the development of adequate brood cover.

Breeding Populations (Table B-7)

Indices for blue-winged teal, northern shoveler, pintail, and scaup indicated the highest breeding population for those species in Montana since surveys were initiated in 1965. Statistics for these and other important species compared with 1978 and the 1969–78 mean, respectively, are as follows: Mallard, +38% and +1%; gadwall, −28% and +61%; American wigeon, -4% and -11%; green-winged teal, +120% and +65%; blue-winged teal, +199% and +98%; northern shoveler, +57% and +224%; pintail, +45% and +115%; redhead, +110% and +456%; canvasback, +64% and +74%; and scaup, +83% and +163%. Total ducks increased 45% over 1978 and 66% from the mean.

The 1979 lone drake index of 77.4 (mallards 76.7 and pintail 78.3) indicated a nesting season slightly more advanced than normal.

The Canada goose index should be considered as a trend figure only. More intensive and timely goose surveys were conducted by the Montana Department of Fish and Game and by the Service's Division of Wildlife Refuges.

Summer Weather and Habitat Conditions

During the May 1979 survey, nesting habitat, although delayed somewhat by a late spring, reflected abundant residual nesting cover and excellent water quality. Total water areas had increased 67% compared with May 1978 and were 38% above the 10-year mean. New growth was retarded but the July survey indicated sufficient brood cover was available. Habitat conditions, however, deteriorated markedly since May. Growth of upland cover and cereal grains was very sparse. Crop yields were anticipated to be 7% below 1978. Water areas were equal in number to those encountered in July 1978, 19% above the 10-year mean, but 35% below the May 1979 survey. Lack of rainfall since May was the main reason for the decline of water areas, and an unseasonably cool spring and generally poor growing conditions was responsible for the poor growth of upland cover.

Production (Table B-7)

The 1979 brood index of 104,300 was the largest such index for Montana since production surveys were initiated in 1966. It was 44% above the 1978 index and 115% above the 10-year mean. The mean brood size of 5.3 was 3% above 1978 and 2% above the 10-year mean.

A breakdown of the brood age classes by stratum indicated that nesting conditions and hatching success were similar over the entire survey area, and that early nesting attempts were successful.

The late nesting index of 8,400 was the second lowest (5,400 in 1977) since the beginning of surveys in 1966. A late spring, coupled with deteriorating habitat, and successful early nesting attempts provided little chance of any significant late nesting success.

North and South Dakota

Data supplied by Edgar Ferguson, Ted Heuer,
James F. Voelzer, and John Tautin
U.S. Fish and Wildlife Service

Spring Weather and Habitat Conditions

In North Dakota, above average precipitation in the spring followed by continual rainfall during and after the survey resulted in excellent marsh habitat throughout most of the State. Pond counts increased 54% over 1978 and 12% were above the 10-year mean.

In South Dakota, slightly less favorable habitat conditions occurred. In western South Dakota, there were 20% fewer ponds than 1978 and 17% fewer than the long-term mean. The southeast portion of the State had 18% more ponds than in 1978 and was 28% above the 10-year mean. Total ponds decreased 14% from 1978 and were 4% below the mean.

Breeding Populations (Tables B-8 and B-9)

In North Dakota, mallards increased 35% from 1978 and were 20% above the long-term mean. Pintails decreased 5% from last year but were still 8% above the mean. The canvasback estimates of 64.4 thousand were the highest in the past 10 years. The spectacular numbers of coots (1.4 million) were thought to reflect the habitat conditions in North Dakota.

In South Dakota, all species except bufflehead, coot, and Canada geese decreased in relation to 1978. Mallard and pintail were slightly above the long-term mean. The coot index was 62% above 1978 and remained 157% above the mean.

As there were higher proportions of lone drakes in South Dakota, it was presumed that the nesting season was more advanced than in North Dakota. Since neither index differed by more than 5% from the previous year, this would indicate little change in breeding phenology between the two years.

Summer Weather and Habitat Conditions

Precipitation for May and June in both States was below normal, especially in the western portions, which caused a reduction in the number of ponds and created lush vegetation on the remaining pothole habitat. Some overwater nesting species may have benefited from generally favorable vegetation on the potholes, but brood visibility was down considerably from "normal" years. Pond counts in North Dakota increased 38% from 1978 but were 8% below the mean. Ponds in South Dakota decreased 13% from 1978 and 14% from the 10-year mean. Ground studies in North Dakota supported a dismal prospect for future waterfowl production because of the decline in quality of the habitat base. Only major changes in land use can reverse this trend, and the outlook for such a change was not optimistic.

Production (Tables B-8 and B-9)

The duck brood index in North Dakota of 30,700 was a decrease of 18% from 1978 and 25% from the mean. This decrease may have been a result of the lush emergent pond growth and the resulting difficulty in brood observation. This held true for South Dakota also, where the brood index decreased 37% from 1978 and 11% from the 10-year mean. Total late-nesting indices for North Dakota are down 50% from last year and 75% from the mean. A similar pattern was observed in South Dakota where late-nesting indices decreased 61% from 1978 and 61% from the 10-year mean.

Minnesota

Data supplied by Robert L. Jessen
Minnesota Department of Natural Resources

Information concerning duck breeding populations in Minnesota is contained in Tables B-10 and B-11.

California

Data supplied by J. LeDonne, F. Kozlik,
H. George, and D. Hinz
California Department of Fish and Game

Weather and Habitat Conditions

Habitat conditions in northeastern California were generally drier in 1979 than in 1978. Some areas have still not recovered from the drought years of 1976 and 1977. Most of the permanent water areas held enough water for this breeding season; however, the temporary waterfowl habitat was almost nonexistent. There were isolated areas in this region that received enough runoff to produce good nesting and brooding conditions for ducks and geese, but this habitat made up only a small portion of the overall area.

The Central Valley received above normal amounts of rainfall and this, together with the runoff from the snowpack in the Sierra Nevada Mountains, filled the State's reservoirs and caused some spillage through the Sacramento River weirs. However, there was not the extensive flooding of lowlands that occurred in late winter and spring of 1978. The Central Valley is mostly composed of artificial and regulated water impoundments such as rice fields, grasslands, and pastures. Rice-field preparation was behind schedule, mainly due to the all-time record of 217,000 ha planted this year in the Central Valley.

Farm ponds, stock tanks, and other small wetland areas scattered over the entire State and not covered by this survey were full and attracted ducks this season.

Breeding Population Indices (Tables B-12 through B-18)

The breeding ground survey for 1979 was conducted in essentially the same manner as in previous years consisting of complete aerial coverage of the "Great Basin" section in northeastern California and aerial transects in the Sacramento Valley, San Joaquin Valley, and Bay Area. On the Klamath Basin National Wildlife Refuge, ground counts were made by refuge personnel and supplemented with aerial survey work.

The survey flights in the Central Valley were conducted on 16 and 17 May, whereas northeastern California was flown from 4 through 8 June. Resulting breeding pair indices indicate an increase in dabblers (+13%), divers (+12%), and total ducks (+12%) compared with 1978. However, Canada geese and coots decreased 7% and 11%, respectively, over the same period.

Colorado

Data supplied by Michael R. Szymczak
Colorado Division of Wildlife

Weather and Habitat Conditions

Water conditions for duck production were good in all areas of the State except the San Luis Valley where the amount of surface water continued to decline. Water in North Park was above average with many basins filled for the first time since 1975. Conditions in the South Platte and Cache la Poudre valleys were best in the western portions of the valleys adjacent to the foothills, and declined eastward. Some artificial marshes in Brown's Park were not optimum for duck production because of a combination of a dry winter and mechanical problems with pumps.

Conditions for Canada goose production were variable throughout the State. In northwest and west-central Colorado, most nests hatched before the high water period, although some flooding was noted, primarily on the Yampa River. In the San Luis Valley, conditions were near normal, and water on the Monte Vista National Wildlife Refuge had improved. In north-central Colorado, reservoirs which had reached a low level in 1977 were near capacity, producing excellent conditions for nesting geese.

Breeding Population and Production (Tables B-19 through B-25)

The total number of duck breeding pairs was down 29% from 1978 levels and 13% below the long-term mean. A decline in the breeding population in the San Luis Valley, which had been expected for a number of years, finally materialized in the 1979 estimate. The large numerical increase in North Park over 1978 levels was not sufficient to offset declines in other areas. The mallard population increased slightly in terms of percent composition but numerically reached a record low level.

Information on the post-nesting season population of Canada geese in northwest Colorado is incomplete; however, total estimated numbers were above 1978 levels and the 1967–78 mean in most areas. Production was below 1978 levels and was expected to be near the 1967–78 mean because of measured or anticipated declines along the Green River.

The aerial breeding pair survey of Canada geese in west central Colorado was conducted on 2 and 4 May 1979, compared with 20 April in 1978 and with 9 May in 1977. The trend in this segment of the nesting population was definitely upward; however, direct year-to-year comparisons were not possible because annual survey dates had not been standardized.

The estimated number of productive breeding pairs of Canada geese in the San Luis Valley was very near the 1977 level.

Results of the 1979 Canada goose production survey in north-central Colorado indicated that the number of adult geese observed in the trend areas was 3% below 1978 and 8% below the 1969–78 mean. However, gosling production increased 45% over 1978 and was 18% above the 1969–78 mean.

Nebraska

Data supplied by John T. Sweet
Nebraska Game and Parks Commission

Weather and Habitat Conditions

Spring temperatures were unseasonably low throughout most of May. Rainfall kept the eastern and western portions of the State in relatively good condition. Although part of the north-central area was dry, most of it, along with the western Sandhills, was snow-covered on 11 May from a late spring storm. The storm contributed to a water index in the Sandhills which was 152% above that of 1978. Despite this increase, total water areas for the State were below 1978.

Breeding Populations (Tables B-26 and B-27)

The 1979 breeding population index for the Sandhills production area was 143,789 birds, an increase of 14% over 1978. Of the 11 identified species, significant changes from 1978 were noted: mallard (+16%), blue-winged teal (+7%), gadwall (+35%), redhead (+101%), canvasback (+304%), and scaup (−72%).

In the Rainwater Basin production area, the breeding duck index was 14,834, an increase of 6% over 1978. Notable changes by species from 1978 were mallard (+23%), blue-winged teal (+115%), northern shoveler (−61%), and scaup (+14%).

Washington

Data supplied by Richard C. Parker
Washington State Game Department

Weather and Habitat Conditions

Below normal precipitation during the 1978–79 winter, combined with a cooler than normal spring, resulted in a 19% decrease in the number of potholes available during May 1979 compared with May 1978.

Cool spring weather helped to maintain surface water through July 1979 when counts totaled 55 on three transects. Surface water was down 17% from July 1978 and down 27% from the 1969–78 mean. Although the number of potholes counted is down from 1978 and the 10-year mean, surface water was generally adequate for the 1979 waterfowl production year.

Breeding Population and Production (Tables B-28 and B-29)

The number of adult ducks on Washington breeding grounds during 1979 totaled 187,950, which is up 21% from 1978 and up 5% from the 1969–78 mean. Dabbling ducks made up 76% of the production potential, with a total of 143,280, and are up 29% from 1978 and 7% from the 10-year mean.

Mallards responded to available water areas with a total of 67,400. They are up 39% from 1978 and up 22% above the 10-year mean. All other dabblers showed increases over 1978 except pintails, which totaled 5,430. Pintails were down 26% from 1978 and down 28% from the 10-year mean. Adult divers constituted 24% of the duck breeding potential during 1979 with a total of 44,410, up 3% from 1978 and the 10-year mean. Most of this increase was attributable to redheads which totaled 17,880, up 45% from 1978 and up 18% from the 10-year mean. Ruddy ducks also showed an increase to 13,340, up 1% from 1978 and up 7% from the mean. All other divers showed a decrease from 1978 and the mean.

The 1979 total of all ducks, geese, and coots was 689,300, up 70% from 1978 and up 33% from the 10-year mean. Young ducks made up 68% of the index, compared with 54% during 1978 and 58% for the long-term mean. All other dabbling ducks showed production increases over 1978 and the 10-year mean, except pintails which totaled 21,300, up 55% from 1978 but down 7% from the 10-year mean.

The diving duck index was 105,000, up 48% from 1978 and up 24% from the 10-year mean. Redhead production totaled 43,500, up 89% from 1978 and up 40% from the 10-year mean. Scaup and ruddy ducks also showed increases over 1978 and the 10-year mean. Goldeneye production was 6,500, up 63% from 1978 but down 25% from the 10-year mean. All other diving ducks were down from 1978 and the 10-year mean.

The Canada goose production index for 1979 was 12,900, down 8% from 1978 and up 5% from the 10-year mean. Most of the production decrease from 1978 was attributable to a larger-than-average harvest of large Canada geese in eastern Washington during the 1978 hunting season. Counts in the Okanogan and Channeled Scablands do not reflect stocking during 1979, and decreases may be somewhat greater than the total indicates. Other depressing effects on Canada goose production result from application by farmers of heptachlor-treated seed grain on fields and coyote predation on islands in the lower Columbia River when pools are lowered for inspection in late March. Each of these is related to management practices and could be corrected with minor changes.

Wisconsin

Data supplied by Richard Hunt, Bruce Moss,
and Dave Evenson
Wisconsin Department of Natural Resources

Weather and Habitat Conditions (Table B-30)

Waterfowl habitat improved considerably over 1978. Surface water increased 11% and ditches and streams were up 33%. Northern production units include over 1,000 wetlands, and a 10% sample is used to estimate habitat conditions. Total wetland habitat improved 13% over 1978. Of this total, wetland types I and VII (seasonally flooded) showed the greatest increases.

Breeding Populations (Table B-31)

The adjusted population estimates from 1973 to 1979 are shown in Table B-31 for each of the three survey regions. Survey results are separated to identify mallards and blue-winged teal (two of Wisconsin's most abundant locally breeding ducks) as individual species; all other species are combined as one group. It should be emphasized that population data for "other species" are based on extremely small sample sizes and probably do not accurately reflect population trends for all species. For this reason "other species" data must be treated with caution in relation to the statewide survey.

Total breeding ducks in Wisconsin increased 34% from 1978. Mallards increased 20% and blue-winged teal 29%. Total ducks increased 41% in the Southeast-Central region, increased 116% in the Northern Low region, and decreased 24% in the Northern High region. The 116% increase in the Northern Low region is due largely to wood duck (*Aix sponsa*), which increased from 6,600 to 65,600, an increase that reflects more on the inadequacy of this survey to census wood ducks than on an actual increase in wood duck population.

Mallard populations experienced a statewide increase of 20% compared with 1978 and were 12% above the previous 6-year mean; blue-winged teal increased 29% over 1978. They are still 21% below the previous 6-year mean.

Mallards and blue-winged teal increased in the Southeast-Central region and the Northern High region. Both species experienced a significant decrease in the Northern Low region.

Waterfowl Harvest Surveys

Data supplied by Samuel M. Carney, Michael F. Sorensen, and Elwood M. Martin
U.S. Fish and Wildlife Service

This report provides estimates of waterfowl hunting activity and harvests during the 1978 season and compares them with estimates for the 1977 season. Estimates for both years were derived from information obtained from three sources: (1) the Postal Service's report of Migratory Bird Hunting and Conservation Stamp (duck stamp) sales, (2) the U.S. Fish and Wildlife Service's Questionnaire Survey of Waterfowl Hunters, and (3) the Service's Waterfowl Parts Collection Survey.

In previous waterfowl status reports, harvest estimates for a particular State related to hunting by individuals who had purchased duck stamps in that State. No allowance could be made for the fact that some of this harvest may not have occurred in the State. Improved computer-analysis procedures now permit us to assign harvest to the States actually hunted This change did not affect the estimated size of the U.S. harvest, but it did increase or decrease State estimates depending upon movements of stamp buyers across State lines (Table C-1). Because State estimates changed and species composition varied among States, flyway and U.S. species composition also changed slightly.

Another change initiated with this report affects estimated species compositions of duck harvests within States. Previously, weights (ducks killed per wing received) were calculated by using State-harvest estimates. The new method uses stamp sales zones (subdivisions of States along county lines), and wings received from in-zone stamp buyers are weighted by using zone-harvest estimates.

Procedures

Survey Sampling

The Waterfowl Hunter Questionnaire Survey is designed to obtain answers from representative samples of the Nation's waterfowl hunters that can be expanded to provide estimates of State, flyway, and national totals. Because no list of waterfowl hunters exists, we obtain samples indirectly by randomly selecting more than 3,000 of the 16,000 post offices that sell duck stamps. Historical sales information is used to select post offices within each stamp sales zone from among three strata (<100, 100–999, or >999 duck stamps sold annually). We usually subsample post offices in large cities by branches or stations. Within States, post offices are selected so that distribution of the samples among zones and strata will be similar to that of duck stamp sales. Each post office selected is sent a supply of postage-paid postcards exceeding anticipated duck stamp sales. Stamp buyers use these cards to record their name, address, and whether their purchase was for hunting or stamp collecting. The last allows us to remove estimated portions of philatelic sales from total duck-stamp sales. A diary portion of the cards may be detached and used to record hunting activity. The approximately 100,000 potential hunters who return a card are sent a questionnaire at the close of the hunting season. We send non-respondents one follow-up questionnaire. About 70,000 contacts return a questionnaire.

The Waterfowl Parts Collection Survey is designed to obtain from waterfowl hunters a representative sample of the waterfowl they shoot from which information can be expanded to State, flyway, and national estimates. Annually we contact about 30,000 hunters selected from successful respondents to the previous year's Questionnaire Survey and Parts Collection Survey; usually about 80% are Questionnaire Survey respondents. Within States, the distribution of these contacts among stamp sales zones is proportional to the previous year's stamp sales. Before the season starts, we send these contacts a supply of postage-paid envelopes with instructions asking them to send one wing from each duck or coot and the tail feathers from each goose they shoot throughout the season and to record the place and time of kill. We include postcards for the hunters to order additional envelopes. About 80,000 parts are received and examined to determine species, sex, and age (immature or adult) for ducks. Only species and age are determined for geese and only species for coots.

Survey Estimates

In determining zone-level means, all questionnaires returned by in-zone stamp buyers, including originals, follow-ups, and those from different stamp sales volume strata, are considered equally. Zone-level means are calculated for retrieved and unretrieved ducks, sea ducks, teal season ducks, geese, and coots as well as for total days hunted. Teal season means for individual States are adjusted downward 9 to 64% based on information from past comparisons of questionnaires sent to all potential hunters; questionnaires are sent only to potential teal season hunters. Each zone mean (including the reduced teal mean) is then multiplied by the number of duck stamps sold in the zone and this, in turn, is multiplied by a State-level estimate of the proportion sold for hunting. Products (zone means × potential hunters) are rough estimates of totals achieved by all potential hunters who bought duck stamps in the zone.

Processing of zone totals differs for various harvest parameters because there are differences in the amount and type of information available. Readers interested in processing details may wish to refer to Table C-2. In most instances we make three adjustments to rough zone totals: (1) fixed reduction factors for each flyway to correct for response bias (Table C-3), (2) fixed expansion factors for each flyway to account for activity by hunters less than 16 years old who are not required to buy a duck stamp (Table C-4), and (3) a single reduction factor (0.9637) to retain comparability after 1969 when a change in questionnaire design caused a change in response. The adjustments for response bias are based on procedures developed by E. L. Atwood (1956, Validity of mail survey data on bagged waterfowl. J. Wildl. Manage. 20(1):1–16). Junior hunter adjustment factors are based on sampling of hunters less than 16 years old during early years of the survey. Application of these three adjustments produces the totals estimated to have been obtained by all hunters from a given zone.

The duck kill associated with each zone is distributed among species and among States by dividing it by the number of duck wings, regardless of species, taken by in-zone duck stamp buyers. The resulting value (weight), ducks harvested per wing returned, is inserted into each wing record. Once wing records are weighted, they are sorted to the State where the bird was shot, and the weights are summed to provide harvest estimates by State of kill.

Because hunters return much smaller numbers of goose tails than of duck wings, zone harvest estimates are combined to a State-of-purchase estimate and then divided by all the tails received from hunters who purchased duck stamps in the State. Once records have been weighted, State goose harvest estimates are derived in the same manner as for ducks.

In seven Atlantic Flyway States, sea duck wings are separated from other ducks and weighted according to the method for geese. In other States, sea ducks and other ducks are combined in all calculations.

Questionnaires sent to hunters in those States that have September teal seasons request both harvest during all waterfowl seasons and harvest during September teal seasons. Teal harvest by persons who bought duck stamps in the Pacific Flyway areas of Colorado and New Mexico is shifted to the Central Flyway parts of these States. Because questions relating to the teal season are not asked of hunters who bought duck stamps in States where this season is not in effect, in weighting, teal season harvest by State of purchase is divided by the number of wings from ducks shot during the teal season in the State, regardless of where the hunter purchased his duck stamp. The resulting values are considered to be the ducks harvested in the State per wing received and their sum to be the teal season duck harvest for the State.

Although coot wings are solicited from hunters, so few are received that they are not used in this analysis. Thus, coot harvest estimates relate only to State of stamp purchase.

We have no method for assigning other harvest parameters to the States where hunting actually took place. Thus, all seasonal means, as well as State totals for numbers of hunters, days hunted, and unretrieved kill relate to State of duck stamp purchase.

Administrative Reports

Data in this report are based on final duck stamp sales information. In the Administrative Report "Waterfowl Harvest and Hunter Activity in the United States During the 1978 Hunting Season" (21 June 1979), preliminary estimates (that were based on duck stamp sales through the third quarter of the July 1978–June 1979 duck stamp sales year and made by using the old estimating procedures) were made available for the annual waterfowl regulations meetings in early August 1979. Age and sex compositions are presented in the Administrative Report, "Age and Sex Composition of Ducks and Geese Harvested in the 1978 Hunting Season in Comparison with Prior Years" (22 June 1979).

Results

Estimates of flyway and U.S.-level harvests of ducks (by species), coots, and unretrieved kill are presented in Table C-5. Similar estimates of geese are in Table C-6. Detailed State-level estimates of the duck, goose, and coot harvest, duck stamp sales, and hunter activity and success may be found in Tables C-7 through C-11. These estimates include hunter activity and harvest during regular and special seasons combined. The harvest and species composition during the September teal season is also shown separately in Table C-12.

The following is a resume of 1978 hunter activity and harvest by flyway showing degree of change from 1977 and, for the most commonly harvested duck species, the percentage each comprised of the 1978 duck harvest.

Atlantic Flyway

Duck stamp sales totaled 451,300 (+4%), and 1,945,900 ducks (+3%), 78,000 coots (+46%), and 347,600 geese (−29%) were harvested during 2,958,200 hunter-days (+8%). Persons buying duck stamps for hunting averaged 6.55 days afield (+4%) and bagged an average of 4.41 ducks (+1%) and 0.79 goose (−32%) each. The three most commonly harvested duck species were mallards (23%), wood ducks (21%), and black ducks (13%). Estimates for the Atlantic Flyway are given in Table C-7.

Mississippi Flyway

Duck stamp sales totaled 848,900 (−3%), and 6,340,000 ducks (+6%), 406,900 coots (+43%), and 593,200 geese (+18%) were harvested during 6,742,600 hunter-days (+1%). Persons buying duck stamps for hunting averaged 7.62 days afield (+4%) and bagged an average of 7.36 ducks (+10%) and 0.70 goose (+21%) each. The three most commonly harvested duck species were mallards (36%), wood ducks (12%), and green-winged teal (10%). Estimates for the Mississippi Flyway are given in Table C-8.

Central Flyway

Duck stamp sales totaled 430,600 (+2%), and 2,969,200 ducks (+22%), 55,800 coots (+37%), and 434,000 geese (−16%) were harvested during 2,992,700 hunter-days (+3%). Persons buying duck stamps for hunting averaged 6.57 days afield (+1%) and bagged an average of 6.61 ducks (+20%) and 0.99 goose (−17%) each. The three most commonly harvested duck species were mallards (36%), green-winged teal (15%), and gadwall (10%). Estimates for the Central Flyway are recorded in Table C-9.

Pacific Flyway

Duck stamp sales totaled 381,300 (no change), and 3,975,400 ducks (+29%), 100,400 coots (-11%), and 324,500 geese (+3%) were harvested during 2,837,900 hunter-days (+1%). Persons buying duck stamps for hunting averaged 7.14 days afield (+2%), and bagged an average of 10.31 ducks (+30%) and 0.86 goose (+5%) each. The three most commonly harvested duck species were mallards (32%), pintails (21%), and green-winged teal (18%). Estimates for the Pacific Flyway are given in Table C-10.

Alaska

Duck stamp sales totaled 19,700 (+2%), and 124,100 ducks (+15%), 600 coots (+31%), and 14,100 geese (−15%) were harvested during 97,800 hunter-days (+14%). Persons buying duck stamps for hunting averaged 4.72 days afield (+13%) and bagged an averge of 6.30 ducks (+15%) and 0.73 goose (−16%) each. The three most commonly harvested duck species were mallards (33%), pintails (15%), and green-winged teal (15%). Estimates for Alaska are given in Table C-11.

United States

Duck stamp sales totaled 2,131,800 (no change), and 15,354,500 ducks (+14%), 641,700 coots (+30%), and 1,713,400 geese (−7%) were harvested during 15,629,200 hunter-days (+2%). Persons buying duck stamps for hunting averaged 7.07 days afield (+3%) and bagged an average of 7.11 ducks (+15%) and 0.80 goose (−7%) each. The five most commonly harvested duck species were mallards (33%), green-winged teal (13%), pintails 9%), wood ducks (8%), and American wigeon (7%). Estimates for the United States are given in Table C-11.

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APPENDIX

Table A-1a. Winter Waterfowl Survey, Pacific Flyway, January 1979.

Species	1979	1978	Percent change from 1978	1969-78 average	Percent change from 1969-78 average
Dabblers					
Mallard	1,216,216	1,483,490	-18	1,756,235	-31
Gadwall	34,196	28,346	+21	26,670	+28
American wigeon	753,431	954,316	-21	768,046	- 2
Green-winged teal	277,506	252,721	+10	247,268	+12
Blue-winged teal	42	0	+	62	-32
Cinnamon teal	2,589	1,620	+59	2,296	+13
Northern shoveler	560,110	627,998	-11	563,944	- 1
Pintail	3,265,814	2,997,128	+ 9	3,045,162	+ 7
Wood duck	1,601	6,286	-75	4,679	-66
Subtotal	6,111,505	6,351,905	- 4	6,414,362	- 5
Divers					
Redhead	16,049	14,728	+ 9	13,383	+20
Canvasback	80,263	78,313	+ 2	68,713	+17
Scaup	111,658	184,713	-40	101,598	+10
Ring-necked duck	4,822	6,749	-29	4,586	+ 5
Goldeneye	33,967	36,718	- 7	41,955	-19
Bufflehead	37,902	36,080	+ 5	32,720	+16
Ruddy duck	74,132	70,648	+ 5	100,144	-26
Subtotal	358,793	427,949	-16	363,099	- 1
Miscellaneous					
Scoter	110,313	105,877	+ 4	96,630	+14
Oldsquaw/harlequin	394	420	- 6	565	-30
Merganser	19,903	34,666	-42	25,821	-23
Subtotal	130,610	140,963	- 7	123,016	+ 6
Unidentified	20,521	27,923	-26	35,878	-43
Total ducks	6,621,429	6,948,815	- 5	6,936,529	- 5
Geese					
Blue, snow, and Ross' goose	246,726	236,081	+ 4	430,172	-43
White-fronted goose	37,013	112,522	-67	97,933	-62
Canada goose and lesser Canada goose	228,803	270,630	-15	220,978	+ 3
Cackling goose	27,668	39,411	-30	74,478	-63
Total geese	539,760	658,644	-18	823,561	-34
Brant					
Black brant	9,343	19,770	-53	10,788	-13
Swans					
Whistling swan	53,523	45,597	+17	58,984	- 9
Trumpeter swan	1,282	1,282	NC	1,056	+21
Total swans	54,805	46,879	+17	60,040	- 9
Coots					
American coot	373,224	286,117	+30	481,337	-22
Grand total	7,598,561	7,960,225	- 5	8,312,255	- 9

Table A-1b. Winter Waterfowl Survey, Central Flyway, January 1979.

Species	1979	1978	Percent change from 1978	Average[a]	Percent change from average
Dabblers					
Mallard	1,575,000	2,212,000	-29	2,204,000	-29
Black duck	6	9	-33	50	-88
Mexican-like	127	270	-53	50	+154
Mottled duck	31,400	38,700	-19	40,800	-23
Gadwall	168,000	101,000	+66	191,000	-12
American wigeon	82,000	121,000	-32	194,000	-58
Green-winged teal	1,201,000	479,000	+151	439,000	+174
Blue-winged teal	1,600	2,500	-36	19,800	-92
Cinnamon teal				70	-
Northern shoveler	55,000	67,000	-18	79,000	-30
Pintail	1,709,000	542,000	+215	1,018,000	+68
Subtotal	4,825,000	3,565,000	+35	4,186,000	+15
Divers					
Redhead	155,000	257,000	-40	295,000	-47
Canvasback	50,000	37,000	+35	15,000	+233
Scaup	29,000	53,000	-45	79,000	-63
Ring-necked duck	2,700	6,800	-60	6,100	-56
Goldeneye	9,100	11,000	-17	11,000	-17
Bufflehead	8,000	5,500	+45	6,200	+29
Ruddy duck	6,700	5,200	+29	4,600	+46
Subtotal	261,000	376,000	-31	417,000	-38
Miscellaneous					
Mergansers	97,000	129,000	-25	73,000	+33
Unidentified	18,300	19,500	- 6	36,000	-49
Total ducks	5,201,000	4,089,000	+27	4,712,000	+10
Geese[b]					
Blue and snow goose	801,000	1,205,000	-34	762,000	+ 5
Ross' goose				9	-
White-fronted goose	69,000	141,000	-51	57,000	+21
Canada goose	483,000	583,000	-17	476,000	+ 1
Total geese	1,353,000	1,928,000	-30	1,295,000	+ 4
Swans					
Whistling swan	13	11	+18		
Trumpeter swan	114	174	-35		
Total swans	127	185	-31		
Coots					
American coot	265,000	196,800	+35		
Grand total	6,819,000	6,162,000	+11		

[a] Averages for ducks are for the 1968-77 period and the 1972-76 period for geese.

[b] Estimates of geese are from mid-December surveys.

Table A-1c. Winter Waterfowl Survey, Mississippi Flyway, January 1979[a].

Species	1979	1978	Percent change from 1978	1969-78 average	Percent change from 1969-78 average
Dabblers					
Mallard	3,072,800	2,604,900	+18	3,019,400	+ 2
Black duck	78,500	91,400	-14	123,100	-36
Mottled duck	44,000	33,000	+33	56,900	-23
Gadwall	505,300	418,300	+21	901,600	-44
American wigeon	137,200	126,700	+ 8	351,400	-61
Green-winged teal	446,100	398,500	+12	831,400	-46
Blue-winged teal	33,000	14,700	+124	131,700	-75
Northern shoveler	42,900	118,200	-64	205,200	-79
Pintail	791,900	491,400	+61	582,000	+36
Subtotal	5,151,700	4,297,100	+20	6,202,500	-17
Divers					
Redhead	6,200	16,100	-61	21,300	-71
Canvasback	91,100	38,800	+135	44,600	+104
Scaup	947,000	169,000	+460	777,200	+22
Ring-necked duck	77,000	60,700	+27	95,000	-19
Goldeneye	52,700	54,600	- 3	32,900	+60
Bufflehead	2,000	5,500	-64	3,400	-41
Ruddy duck	4,800	6,600	-27	18,500	-74
Subtotal	1,180,800	351,300	+236	992,800	+19
Miscellaneous					
Scoter and eider					
Oldsquaw	2,100	3,200	-34		
Merganser	36,600	29,900	+22		
Subtotal	38,700	33,100	+17		
Unidentified	64,700	38,100	+70	52,500	+23
Total ducks	6,435,900	4,719,600	+36	7,247,700	-11
Geese[b]					
Blue and snow goose	513,000	794,100	-35	585,100	-12
White-fronted goose	49,300	53,100	- 7	44,000	+12
Canada goose	844,100	1,067,100	-21	686,600	+23
Total geese	1,406,400	1,914,300	-27	1,315,700	+ 7[c]
Coots					
American coot	463,500	897,200	-48	1,059,900	-56
Grand total	8,305,800	7,531,100	+10	9,625,400	-14

[a] Survey conducted late in Louisiana and not completed in portions of Louisiana and Mississippi.

[b] Figures are from mid-December goose survey.

[c] The current year's goose figures and those of the 10-year average are not strictly comparable because the 10-year average is made up of both January (pre-1970) and December (post-1970) figures.

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Table A-1d. Winter Waterfowl Survey, Atlantic Flyway, January 1979.

Species	1979	1978	Percent change from 1978	1969-78 average	Percent change from 1969-78 average
Dabblers					
Mallard	264,210	267,568	- 1	211,453	+25
Black duck	236,268	269,535	-12	271,241	-13
Mottled duck	500	100	+400	408	+23
Gadwall	31,749	21,544	+47	20,063	+58
American wigeon	48,820	69,686	-30	73,797	-34
Green-winged teal	49,688	40,098	+24	62,721	-21
Blue-winged teal	15,000	19,404	-23	10,750	+40
Northern shoveler	11,132	5,037	+121	12,855	-13
Pintail	72,071	89,607	-20	102,525	-30
Tree duck	400		+	70	+329
Subtotal	729,838	778,579	- 6	765,346	- 5
Divers					
Redhead	93,646	147,649	-37	114,430	-18
Canvasback	143,305	117,011	+23	115,329	+24
Scaup	388,800	314,135	+24	480,132	-19
Ring-necked duck	33,109	31,182	+ 6	61,207	-47
Goldeneye	37,183	40,466	- 8	50,896	-27
Bufflehead	57,166	71,924	-21	53,674	+ 7
Ruddy duck	139,125	45,537	+200	50,123	+178
Subtotal	892,334	767,904	+16	925,793	- 4
Miscellaneous					
Eider	115,996	84,351	+36	67,561	+72
Scoter	49,574	58,616	-15	86,561	-43
Oldsquaw	18,249	18,268	NC	13,489	+35
Merganser	46,621	64,059	-27	45,741	+ 2
Subtotal	230,440	225,294	+ 2	213,352	+ 8
Unidentified	30,302	9,561	+300	27,813	+ 9
Total ducks	1,882,914	1,781,338	+ 6	1,938,114	- 3
Geese					
Snow goose	99,920	73,703	+36	76,618	+30
Blue goose	1,793	1,458	+23	1,839	- 3
Canada goose	823,605	833,232	- 1	766,202	+ 8
Total geese	925,318	908,393	+ 2	844,659	+10
Brant					
Atlantic brant	43,554	46,340	- 6	92,701	-53
Swans					
Whistling swan	78,558	70,248	+12	65,093	+21
Mute swan	2,102	2,142	- 2	1,970	+ 7
Total swans	80,660	72,390	+11	67,063	+20
Coots	319,569	296,641	+ 8	348,851	- 8
Grand total	3,252,015	3,105,102	+ 5	3,289,334	- 1

Table A-2. Winter Survey, January 1979--Waterfowl by State and Flyway.

State	Ducks	Geese	Brant	Swans	Coots	Total
Pacific Flyway						
Washington	574,449	54,833	8,078	1,771	12,858	651,989
Oregon	334,580	107,031	1,255	3,962	14,181	461,009
Idaho	832,406	35,625		808	16,922	435,761
Nevada	18,550	5,735		234	8,490	33,009
California	5,207,280	323,985	10	47,730	317,385	5,896,390
Utah	37,580	3,752		33	208	41,573
Arizona[a]	18,546	1,752			3,160	23,458
Montana[a]	25,576	374		267	20	26,237
Wyoming[a]	No survey	No survey	No survey	No survey	No survey	No survey
Colorado[a]	13,275	2,979				16,254
New Mexico[a]	8,887	3,694				12,581
Flyway total	6,621,429	539,760	9,343	54,805	373,224	7,598,561
Central Flyway						
Montana[b]	31,000	1,300				32,300
Wyoming[b]	24,000	5,800				29,800
North Dakota	1,700	1,100				2,800
South Dakota	146,000	78,000		114		224,000
Nebraska	250,000	12,000				262,000
Colorado[b]	187,000	83,000		2		270,000
Kansas	353,000	241,000				594,000
Oklahoma	175,000	96,000		9		271,000
New Mexico[b]	186,000	41,000		2		227,000
Texas	3,845,000	793,000			265,000	4,903,000
Flyway total	5,201,000	1,353,000		127	265,000	6,819,000
Mississippi Flyway						
Minnesota	26,900	30,200		TR[e]	TR	57,100
Wisconsin	20,700	2,200				22,900
Michigan	22,500	24,500		TR		47,000
Iowa	26,800	71,900				98,700
Missouri	157,000	277,900		TR	4,800	439,700
Illinois	242,500	368,900		TR	100	611,500
Indiana	60,000	28,200			200	88,400
Ohio	32,500	24,200		TR	200	56,900
Arkansas	626,100	9,100			3,400	638,600
Mississippi[c]	251,800	3,400			10,200	265,400
Louisiana[c,d]	4,451,200	403,200		TR	406,800	5,261,200
Alabama	93,800	27,900		TR	25,200	146,900
Kentucky	49,600	48,100		TR	100	97,800
Tennessee	374,500	86,700		TR	12,500	473,700
Flyway total	6,435,900	1,406,400		TR	463,500	8,305,800

Table A-2. Continued.

State	Ducks	Geese	Brant	Swans	Coots	Total
Atlantic Flyway						
Maine	59,398	710	100			60,108
New Hampshire	597	840				1,797
Vermont	3,144	583				3,727
Massachusetts	151,760	16,192	760	427		169,139
Connecticut	33,030	5,417		597		39,044
Rhode Island	22,688	1,291	8	81		24,068
New York	87,165	14,085	8,211	562	238	110,281
New Jersey	254,910	30,170	31,890	3,468	220	320,658
Pennsylvania	27,491	27,573		600	62	55,726
Delaware	41,048	48,729	885	101		90,763
Maryland	240,800	594,200		34,521	3,700	873,221
Virginia	121,428	98,548	1,700	9,683	2,449	233,808
West Virginia	1,895	580				2,475
North Carolina	425,600	77,000		30,500	31,800	564,900
South Carolina	237,800	7,100		100	116,500	361,500
Georgia	27,200	900			14,000	42,100
Florida	146,500	1,400			150,600	298,500
Flyway total	1,882,914	925,318	43,554	80,660	319,569	3,252,015

[a] Pacific Flyway portion only.

[b] Central Flyway portion only.

[c] Survey not complete in portions of State.

[d] Survey conducted late (16-22 January).

[e] TR=TRace; fewer than 50 birds.

Table A-3. Winter Waterfowl Survey of Mexico, January 1979.

Species	East Coast			Interior Highlands			West Coast			Total Mexico		
	1979	1978	Percent change from 1978	1979	1978	Percent change from 1978	1979	1978	Percent change from 1978	1979	1978	Percent change from 1978
Dabblers												
Mallard	90	5	+	10,480	3,530	+197	35		+	10,605	3,535	+200
Mexican duck				14,215	22,470	- 36		10	-	14,215	22,480	- 37
Mottled duck	2,200	3,510	- 37							2,200	3,510	- 37
Gadwall	46,035	30,500	+ 51	12,875	28,000	- 54	10,315	21,781	- 53	69,225	80,281	- 14
American wigeon	98,290	119,625	- 18	23,000	62,385	- 63	106,290	96,285	+ 10	227,580	278,295	- 18
Green-winged teal	33,815	11,600	+192	90,485	173,345	- 52	220,300	207,215	- 6	344,600	392,160	- 12
Blue-winged teal and cinnamon teal	583,610	288,145	+102	33,635	32,200	+ 4	177,745	312,965	- 43	794,990	633,310	+ 26
Northern shoveler	74,940	58,520	+ 28	60,620	102,500	- 41	126,380	192,122	- 34	261,940	353,142	- 26
Pintail	219,160	150,385	+ 46	151,890	168,215	- 10	756,385	896,650	- 16	1,127,435	1,215,250	- 7
Fulvous tree duck[a]	81,505	35,725	+128		75	-	11,860	21,720	- 45	114,655	68,505	+ 67
Black-bellied tree duck[a]				15	700	- 98	21,275	10,285	+107			
Subtotal	1,139,645	698,015	+ 63	397,215	593,420	- 33	1,430,585	1,759,033	- 19	2,967,445	3,050,468	- 3
Divers												
Redhead	198,945	268,550	- 26	9,235	690	+	19,670	22,411	- 12	227,850	291,651	- 22
Canvasback	11,275	9,405	+ 20	1,570	7,250	- 78	40	1,382	- 97	12,885	18,037	- 29
Scaup	147,495	226,215	- 35	2,750	9,195	- 70	79,825	99,451	- 20	230,070	334,861	- 31
Ringneck	18,915	22,215	- 15	350	15,865	- 98	100	1,072	- 91	19,365	39,152	- 50
Goldeneye							20	816	- 98	20	816	- 98
Bufflehead	265	190	+ 40	235	75	+213	2,370	2,097	+ 13	2,870	2,362	+ 22
Ruddy duck	10,925	17,615	- 38	320	150	+113	3,940	9,875	- 60	15,185	27,640	- 45
Subtotal	387,820	544,190	- 29	14,460	33,225	- 56	105,965	137,104	- 23	508,245	714,519	- 29
Miscellaneous												
Scoters							18,780	7,486	+151	18,780	7,486	+151
Mergansers	1,025	940	+ 9	190	220	- 14	5,960	7,010	- 15	7,175	8,170	- 12
Other					10,660	-		6,750	-		17,410	-
Subtotal	1,025	940	+ 9	190	10,880	- 98	24,740	21,246	+ 16	25,955	33,066	- 22
Total ducks	1,528,490	1,243,145	+ 23	411,865	637,525	- 35	1,561,290	1,917,383	- 19	3,501,645	3,798,053	- 8
Geese												
Canada	3,035	4,200	- 28	190		+	30		+	3,255	4,200	- 22
Brant							120,070	143,117	- 16	120,070	143,117	- 16
White-fronted	33,165	9,550	+247	26,545	34,450	- 23	3,790	2,137	+ 77	63,500	46,137	+ 38
Snow/blue	17,480	25,615	- 32	60,770	56,795	+ 7	725	600	+ 21	78,975	83,010	- 5
Total geese	53,680	39,365	+ 36	87,505	91,245	- 4	124,615	145,854	- 15	265,800	276,464	- 4
Coot	814,695	629,840	+ 29	91,075	74,835	+ 22	160,040	151,315	+ 6	1,065,810	855,990	+ 24

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[a] Tree ducks combined on East Coast and on Total Mexico.

APPENDIX B. WATERFOWL BREEDING GROUND SURVEY TABLES.

TABLE B-1. ALASKA--1979 WATERFOWL BREEDING GROUND SURVEY RESULTS.

	WATERFOWL BREEDING PAIR SURVEY (NUMBERS IN THOUSANDS)			
	1979 [a]	% CHANGE FROM 1978	1969-1978 AVERAGE	% CHANGE FROM AVERAGE
MAY PONDS	NOT APPLICABLE			
	BREEDING POPULATION ESTIMATES			
DUCKS:				
DABBLERS:				
MALLARD	234.5	-13	211.9	+11
BLACK DUCK	0.0	N.C.	0.0	N.C.
GADWALL	1.2	-64	1.6	-25
AMERICAN WIGEON	755.9	-15	530.0	+43
GREEN-WINGED TEAL	277.9	-8	261.2	+6
BLUE-WINGED TEAL	0.0	-100	1.8	-100
NORTHERN SHOVELER	119.0	-50	109.5	+9
PINTAIL	1,020.8	-26	1,263.0	-19
SUBTOTAL	2,409.3	-22	2,379.0	+1
DIVERS:				
REDHEAD	1.5	+1400	1.8	-17
CANVASBACK	61.4	+28	74.9	-18
SCAUP	1,203.2	-9	1,264.3	-5
RING-NECKED	.6		0.0	
AMERICAN GOLDENEYE	158.5	+52	130.6	+21
BUFFLEHEAD	113.7	+13	73.8	+54
SUBTOTAL	1,539.2	-2	1,545.4	N.C.
MISCELLANEOUS:				
OLDSQUAW	677.2	-25	623.2	+9
EIDER	23.6	+72	23.9	-1
SCOTER	472.6	+2	381.0	+24
RUDDY DUCK	0.0	N.C.	0.0	N.C.
MERGANSER	8.2	-53	6.7	+22
SUBTOTAL	1,181.6	-16	1,034.8	+14
TOTAL DUCKS	5,130.1	-16	4,959.2	+3
COOTS				
AMERICAN COOT	0.0	N.C.	0.0	N.C.
GRAND TOTAL	5,130.1	-16	4,959.2	+3

	WATERFOWL PRODUCTION SURVEY (NUMBERS IN THOUSANDS)			
	1979	% CHANGE FROM 1978	1969-1978 AVERAGE	% CHANGE FROM AVERAGE
JULY PONDS	NOT APPLICABLE			
DUCK BROOD INDEX	NOT APPLICABLE			
AVG. BROOD SIZE	NOT APPLICABLE			
	LATE-NESTING INDEXES			
	NOT APPLICABLE			

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[a] Averages added in for Stratum 7 which is no longer surveyed.

TABLE B-2. NORTHERN ALBERTA AND THE NORTHWEST TERRITORIES--1979 WATERFOWL BREEDING GROUND SURVEY RESULTS.

WATERFOWL BREEDING PAIR SURVEY
(NUMBERS IN THOUSANDS)

	1979	% CHANGE FROM 1978	1969-1978 AVERAGE	% CHANGE FROM AVERAGE
MAY PONDS	NOT APPLICABLE			
	BREEDING POPULATION ESTIMATES			
DUCKS:				
DABBLERS:				
MALLARD	1,261.2	+14	1,136.8	+11
BLACK DUCK	0.0	N.C.	0.1	-100
GADWALL	63.9	+76	29.3	+118
AMERICAN WIGEON	688.4	-26	755.7	-9
GREEN-WINGED TEAL	916.6	-5	652.4	+40
BLUE-WINGED TEAL	291.9	-26	231.1	+26
NORTHERN SHOVELER	123.7	+24	170.8	-28
PINTAIL	358.0	-6	473.2	-24
SUBTOTAL	3,703.7	-5	3,449.4	+7
DIVERS:				
REDHEAD	44.8	-45	35.2	+27
CANVASBACK	48.2	+54	46.6	+3
SCAUP	4,529.7	+33	3,943.5	+15
RING-NECKED	109.3	-28	118.8	-8
AMERICAN GOLDENEYE	308.2	+36	111.6	+176
BUFFLEHEAD	541.2	-2	462.8	+17
SUBTOTAL	5,581.4	+26	4,718.5	+18
MISCELLANEOUS:				
OLDSQUAW	2,044.1	+248	724.1	+182
EIDER	3.3		0.0	
SCOTER	1,295.9	+17	864.7	+50
RUDDY DUCK	18.3	+8	35.0	-48
MERGANSER	194.4	-28	96.7	+101
SUBTOTAL	3,556.0	+79	1,720.5	+107
TOTAL DUCKS	12,841.1	+24	9,888.4	+30
COOTS				
AMERICAN COOT	12.2	-85	113.4	-89
GRAND TOTAL	12,853.3	+23	10,001.8	+29

WATERFOWL PRODUCTION SURVEY
(NUMBERS IN THOUSANDS)

	1979	% CHANGE FROM 1978	1969-1978 AVERAGE	% CHANGE FROM AVERAGE
JULY PONDS	NOT APPLICABLE			
DUCK BROOD INDEX	NOT APPLICABLE			
AVG. BROOD SIZE	NOT APPLICABLE			

LATE-NESTING INDEXES

NOT APPLICABLE

TABLE B-3. NORTHERN SASKATCHEWAN AND NORTHERN MANITOBA--1979 WATERFOWL BREEDING GROUND SURVEY RESULTS.

WATERFOWL BREEDING PAIR SURVEY
(NUMBERS IN THOUSANDS)

	1979	% CHANGE FROM 1978	1969-1978 AVERAGE	% CHANGE FROM AVERAGE
MAY PONDS	NOT APPLICABLE			
	BREEDING POPULATION ESTIMATES			
DUCKS:				
DABBLERS:				
MALLARD	1,154.2	-13	1,028.3	+12
BLACK DUCK	2.1	-75	4.0	-48
GADWALL	30.1	-29	54.4	-45
AMERICAN WIGEON	278.2	-24	321.2	-13
GREEN-WINGED TEAL	675.5	-27	381.6	+77
BLUE-WINGED TEAL	209.2	-48	311.0	-33
NORTHERN SHOVELER	26.3	-44	50.3	-48
PINTAIL	45.1	-59	95.2	-53
SUBTOTAL	2,420.7	-25	2,246.0	+8
DIVERS:				
REDHEAD	18.7	-43	47.8	-61
CANVASBACK	18.9	-39	39.4	-52
SCAUP	1,292.1	+52	880.2	+47
RING-NECKED	212.9	-35	322.8	-34
AMERICAN GOLDENEYE	133.5	-28	235.6	-43
BUFFLEHEAD	240.6	-2	190.3	+26
SUBTOTAL	1,916.7	+15	1,716.1	+12
MISCELLANEOUS:				
OLDSQUAW	0.0	N.C.	.6	-100
EIDER	0.0	N.C.	0.0	N.C.
SCOTER	78.5	-5	68.6	+14
RUDDY DUCK	7.7	-50	14.2	-46
MERGANSER	263.8	-46	272.3	-3
SUBTOTAL	350.0	-41	355.7	-2
TOTAL DUCKS	4,687.4	-15	4,317.8	+9
COOTS				
AMERICAN COOT	30.3	-64	92.4	-67
GRAND TOTAL	4,717.7	-15	4,410.2	+7

WATERFOWL PRODUCTION SURVEY
(NUMBERS IN THOUSANDS)

	1979	% CHANGE FROM 1978	1969-1978 AVERAGE	% CHANGE FROM AVERAGE
JULY PONDS	NOT APPLICABLE			
DUCK BROOD INDEX	NOT APPLICABLE			
AVG. BROOD SIZE	NOT APPLICABLE			
	LATE-NESTING INDEXES			
	INCOMPLETE SURVEY			

TABLE B-4. SOUTHERN ALBERTA—1979 WATERFOWL BREEDING GROUND SURVEY RESULTS.

	WATERFOWL BREEDING PAIR SURVEY (NUMBERS IN THOUSANDS)					WATERFOWL PRODUCTION SURVEY (NUMBERS IN THOUSANDS)			
	1979	% CHANGE FROM 1978	1969-1978 AVERAGE	% CHANGE FROM AVERAGE		1979	% CHANGE FROM 1978	1969-1978 AVERAGE	% CHANGE FROM AVERAGE
MAY PONDS	591.2	+19	736.2	-20	JULY PONDS	437.8	+22	472.5	-7
					DUCK BROOD INDEX	129.3	-2	111.4	+16
					AVG. BROOD SIZE	5.100	-7	5.362	-5
		BREEDING POPULATION ESTIMATES					LATE-NESTING INDEXES		
DUCKS:									
DABBLERS:									
MALLARD	983.2	+19	1,424.7	-31		17.4	-15	19.4	-10
BLACK DUCK	0.0	N.C.	0.0	N.C.		0.0	N.C.	0.0	N.C.
GADWALL	346.5	+24	359.0	-3		11.8	+26	8.3	+42
AMERICAN WIGEON	402.4	+33	393.6	+2		9.1	+11	6.7	+36
GREEN-WINGED TEAL	256.9	+16	294.2	-13		8.8	+66	8.0	+10
BLUE-WINGED TEAL	592.9	+51	722.8	-18		12.7	-29	11.2	+13
NORTHERN SHOVELER	391.4	-4	419.2	-7		5.1	-9	6.1	-16
PINTAIL	1,456.3	+34	1,362.4	+7		7.2	-8	8.9	-19
SUBTOTAL	4,429.6	+26	4,975.9	-11		72.1	-3	68.6	+5
DIVERS:									
REDHEAD	100.8	-25	159.3	-37		1.1	-31	1.6	-31
CANVASBACK	53.4	-39	78.7	-32		1.2	+100	1.1	+9
SCAUP	687.5	+48	439.3	+56		35.3	+36	20.5	+72
RING-NECKED	6.8	-58	7.1	-4		0.0	-100	.7	-100
AMERICAN GOLDENEYE	8.6	-77	18.8	-54		.4	-20	.2	+100
BUFFLEHEAD	62.9	+11	40.1	+57		.4	-56	.3	+33
SUBTOTAL	920.0	+16	743.3	+24		38.4	+24	24.4	+57
MISCELLANEOUS:									
OLDSQUAW	0.0	N.C.	0.0	N.C.		0.0	N.C.	0.0	N.C.
EIDER	0.0	N.C.	0.0	N.C.		0.0	N.C.	0.0	N.C.
SCOTER	43.5	+39	19.8	+120		1.6	+700	.5	+220
RUDDY DUCK	41.1	-52	79.5	-48		4.8	+20	5.6	-14
MERGANSER	3.6	-65	3.7	-3		.2		0.0	
SUBTOTAL	88.2	-31	103.0	-14		6.6	+57	6.1	+8
TOTAL DUCKS	5,437.8	+22	5,822.2	-7		117.1	+7	99.1	+18
COOTS									
AMERICAN COOT	418.0	+148	334.2	+25					
GRAND TOTAL	5,855.8	+27	6,156.4	-5					

TABLE B-5. SOUTHERN SASKATCHEWAN--1979 WATERFOWL BREEDING GROUND SURVEY RESULTS.

	WATERFOWL BREEDING PAIR SURVEY (NUMBERS IN THOUSANDS)				WATERFOWL PRODUCTION SURVEY (NUMBERS IN THOUSANDS)				
	1979	% CHANGE FROM 1978	1969-1978 AVERAGE	% CHANGE FROM AVERAGE		1979	% CHANGE FROM 1978	1969-1978 AVERAGE	% CHANGE FROM AVERAGE
MAY PONDS	2,952.0	+42	2,161.1	+37	JULY PONDS	1,036.4	+22	1,135.8	-9
					DUCK BROOD INDEX	107.2	-18	149.5	-28
					AVG. BROOD SIZE	5.294	+12	5.042	+5
	BREEDING POPULATION ESTIMATES					LATE-NESTING INDEXES			
DUCKS:									
DABBLERS:									
MALLARD	2,237.1	+17	2,584.8	-13		87.3	+58	70.0	+25
BLACK DUCK	.7		.2	+250		0.0	N.C.	0.0	N.C.
GADWALL	993.6	+21	614.1	+62		29.8	-9	30.7	-3
AMERICAN WIGEON	812.8	+27	757.1	+7		13.8	+50	14.6	-5
GREEN-WINGED TEAL	463.7	+53	336.5	+38		12.2	+130	9.2	+33
BLUE-WINGED TEAL	1,482.8	+64	1,722.7	-14		34.1	+101	25.5	+34
NORTHERN SHOVELER	692.4	+62	698.3	-1		10.0	+82	12.9	-22
PINTAIL	1,580.0	+64	1,827.2	-14		16.2	N.C.	28.8	-44
SUBTOTAL	8,263.1	+39	8,540.9	-3		203.4	+44	191.7	+6
DIVERS:									
REDHEAD	227.9	+24	214.5	+6		8.9	+56	7.1	+25
CANVASBACK	280.9	+118	216.1	+30		3.2	+7	4.8	-33
SCAUP	796.5	+51	403.3	+97		42.4	+97	17.8	+138
RING-NECKED	54.0	+4	30.8	+75		5.0	+35	2.0	+150
AMERICAN GOLDENEYE	40.2	+154	21.3	+89		.9	+80	.4	+125
BUFFLEHEAD	61.8	+6	41.0	+51		4.2	+163	2.2	+91
SUBTOTAL	1,461.3	+51	927.0	+58		64.6	+79	34.3	+88
MISCELLANEOUS:									
OLDSQUAW	0.0	N.C.	0.0	N.C.		0.0	N.C.	0.0	N.C.
EIDER	0.0	N.C.	0.0	N.C.		0.0	N.C.	0.0	N.C.
SCOTER	15.1	+372	4.1	+268		1.4	-53	.8	+75
RUDDY DUCK	134.5	+98	96.9	+39		23.8	+69	17.1	+39
MERGANSER	8.2	+100	2.3	+257		0.0	-100	.1	-100
SUBTOTAL	157.8	+109	103.3	+53		25.2	+43	18.0	+40
TOTAL DUCKS	9,882.2	+41	9,571.2	+3		293.2	+50	244.0	+20
COOTS									
AMERICAN COOT	1,309.1	+202	840.7	+56					
GRAND TOTAL	11,191.3	+50	10,411.9	+7					

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TABLE B-6. SOUTHERN MANITOBA--1979 WATERFOWL BREEDING GROUND SURVEY RESULTS.

	WATERFOWL BREEDING PAIR SURVEY (NUMBERS IN THOUSANDS)					WATERFOWL PRODUCTION SURVEY (NUMBERS IN THOUSANDS)			
	1979	% CHANGE FROM 1978	1969-1978 AVERAGE	% CHANGE FROM AVERAGE		1979	% CHANGE FROM 1978	1969-1978 AVERAGE	% CHANGE FROM AVERAGE
MAY PONDS	776.1	-16	708.4	+10	JULY PONDS	328.7	+6	348.1	-6
					DUCK BROOD INDEX	28.4	-37	26.2	+8
					AVG. BROOD SIZE	5.187	+5	5.405	-4
	BREEDING POPULATION ESTIMATES					LATE-NESTING INDEXES			
DUCKS:									
DABBLERS:									
MALLARD	356.9	+24	348.3	+2		16.4	+1	13.1	+25
BLACK DUCK	1.8	+260	.2	+800		0.0	N.C.	0.0	N.C.
GADWALL	223.3	+21	77.6	+188		4.5	+137	1.2	+275
AMERICAN WIGEON	71.6	+15	44.2	+62		3.4	+113	1.3	+162
GREEN-WINGED TEAL	104.2	+14	110.2	-5		1.3	-65	1.3	N.C.
BLUE-WINGED TEAL	440.7	+58	524.5	-16		7.9	+5	4.7	+68
NORTHERN SHOVELER	85.9	+32	89.4	-4		.9	+50	.8	+13
PINTAIL	196.0	+116	177.4	+10		1.6	-41	1.6	N.C.
SUBTOTAL	1,480.4	+39	1,371.8	+8		36.0	+5	24.0	+50
DIVERS:									
REDHEAD	80.6	+165	32.6	-2		2.1	+250	.8	+163
CANVASBACK	49.3	+32	60.7	-19		.8	+100	.5	+60
SCAUP	89.6	-61	123.5	-27		5.2	+21	1.9	+174
RING-NECKED	38.7	+23	13.1	+195		.7	+250	.3	+133
AMERICAN GOLDENEYE	20.9	-56	20.7	+1		.5		.1	+400
BUFFLEHEAD	11.8	-65	17.6	-33		.7		.2	+250
SUBTOTAL	290.9	-29	318.2	-9		10.0	+82	3.8	+163
MISCELLANEOUS:									
OLDSQUAW	0.0	N.C.	0.0	N.C.		0.0	N.C.	0.0	N.C.
EIDER	0.0	N.C.	0.0	N.C.		0.0	N.C.	0.0	N.C.
SCOTER	.5	-44	.9	-44		0.0	N.C.	0.0	N.C.
RUDDY DUCK	43.7	-56	90.5	-52		4.6	+39	4.5	+2
MERGANSER	17.2	+182	4.6	+274		0.0	N.C.	0.0	N.C.
SUBTOTAL	61.4	-43	96.0	-36		4.6	+39	4.5	+2
TOTAL DUCKS	1,832.7	+16	1,786.0	+3		50.7	+18	32.3	+57
COOTS									
AMERICAN COOT	182.8	-35	295.7	-38					
GRAND TOTAL	2,015.5	+8	2,081.7	-3					

TABLE B-7. MONTANA—1979 WATERFOWL BREEDING GROUND SURVEY RESULTS.

	WATERFOWL BREEDING PAIR SURVEY (NUMBERS IN THOUSANDS)					WATERFOWL PRODUCTION SURVEY (NUMBERS IN THOUSANDS)			
	1979	% CHANGE FROM 1978	1969-1978 AVERAGE	% CHANGE FROM AVERAGE		1979	% CHANGE FROM 1978	1968-1978[b] AVERAGE	% CHANGE FROM AVERAGE
MAY PONDS	353.0	+67	256.3	+38	JULY PONDS	223.8	N.C.	187.9	+19
					DUCK BROOD INDEX	104.3	+44	48.5	+115
					AVG. BROOD SIZE	5.344	+3	5.223	+2
	BREEDING POPULATION ESTIMATES					LATE-NESTING INDEXES			
DUCKS:									
DABBLERS:									
MALLARD	389.3	+38	385.7	+1		1.8	-51	7.9	-77
BLACK DUCK	0.0	N.C.	0.0	N.C.		0.0	N.C.	0.0	N.C.
GADWALL	125.5	-28	77.8	+61		1.2	-65	1.6	-25
AMERICAN WIGEON	150.4	-4	169.9	-11		1.4	-30	3.7	-63
GREEN-WINGED TEAL	114.3	+120	69.2	+65		0.0	N.C.	.3	-100
BLUE-WINGED TEAL	280.4	+199	141.7	+98		.9	-36	1.3	-31
NORTHERN SHOVELER	281.5	+57	86.9	+224		.3		.6	-50
PINTAIL	505.2	+45	235.5	+115		1.5	-6	2.2	-32
SUBTOTAL	1,846.6	+43	1,166.7	+58		7.1	-41	17.6	-60
DIVERS:									
REDHEAD	40.6	+110	7.3	+456		.1	-50	.1	N.C.
CANVASBACK	12.5	+64	7.2	+74		0.0	N.C.	.4	-100
SCAUP	132.2	+83	50.3	+163		1.1	N.C.	1.1	N.C.
RING-NECKED	0.0	-100	.6	-100		0.0	N.C.	.1	-100
AMERICAN GOLDENEYE	1.2		1.4	-17		0.0	N.C.	.1	-100
BUFFLEHEAD	3.4	+183	.8	+325		0.0	N.C.	0.0	N.C.
SUBTOTAL	189.9	+88	67.6	+181		1.2	-8	1.8	-33
MISCELLANEOUS:									
OLDSQUAW	0.0	N.C.	0.0	N.C.		0.0	N.C.	0.0	N.C.
EIDER	0.0	N.C.	0.0	N.C.		0.0	N.C.	0.0	N.C.
SCOTER	0.0	N.C.	0.0	N.C.		0.0	N.C.	0.0	N.C.
RUDDY DUCK	44.2	-12	19.5	+127		.1	-83	.4	-75
MERGANSER	2.6	+117	.7	+271		0.0	N.C.	.1	-100
SUBTOTAL	46.8	-9	20.2	+132		.1	-83	.5	-80
TOTAL DUCKS	2,083.3	+45	1,254.5	+66		8.4	-40	19.9	-58
COOTS									
AMERICAN COOT	367.2	+285	36.0	+920					
GRAND TOTAL	2,450.5	+59	1,290.5	+90					

[b] No survey in 1971

TABLE B-8. NORTH DAKOTA--1979 WATERFOWL BREEDING GROUND SURVEY RESULTS.

	WATERFOWL BREEDING PAIR SURVEY (NUMBERS IN THOUSANDS)					WATERFOWL PRODUCTION SURVEY (NUMBERS IN THOUSANDS)			
	1979	% CHANGE FROM 1978	1969-1978 AVERAGE	% CHANGE FROM AVERAGE		1979	% CHANGE FROM 1978	1969-1978 AVERAGE	% CHANGE FROM AVERAGE
MAY PONDS	637.3	+54	570.1	+12	JULY PONDS	317.5	+38	346.2	-8
					DUCK BROOD INDEX	30.7	-18	40.7	-25
					AVG. BROOD SIZE	4.844	-12	5.673	-15
	BREEDING POPULATION ESTIMATES					LATE-NESTING INDEXES			
DUCKS:									
DABBLERS:									
MALLARD	684.6	+35	570.5	+20		2.9	-53	13.5	-79
BLACK DUCK	0.0	N.C.	0.0	N.C.		0.0	N.C.	0.0	N.C.
GADWALL	410.4	+68	276.1	+49		2.0	-17	10.9	-82
AMERICAN WIGEON	144.2	-21	155.3	-7		.4	-20	1.0	-60
GREEN-WINGED TEAL	58.7	+59	65.6	-11		0.0	N.C.	.9	-100
BLUE-WINGED TEAL	934.8	+27	814.5	+15		1.2	-14	8.9	-87
NORTHERN SHOVELER	472.5	+70	231.5	+104		.5		.4	+25
PINTAIL	560.2	-5	520.4	+8		1.9	-59	2.7	-30
SUBTOTAL	3,265.4	+27	2,633.9	+24		8.9	-41	38.3	-77
DIVERS:									
REDHEAD	204.8	+3	152.9	+34		.7	-80	1.6	-56
CANVASBACK	64.4	+164	31.9	+102		.1	-83	.2	-50
SCAUP	252.5	+168	50.5	+400		.3	-40	.5	-40
RING-NECKED	57.4	+348	7.6	+655		0.0	N.C.	0.0	N.C.
AMERICAN GOLDENEYE	0.0	N.C.	.1	-100		0.0	N.C.	0.0	N.C.
BUFFLEHEAD	2.3	+156	.6	+283		0.0	N.C.	0.0	N.C.
SUBTOTAL	581.4	+76	243.6	+139		1.1	-76	2.3	-52
MISCELLANEOUS:									
OLDSQUAW	0.0	N.C.	0.0	N.C.		0.0	N.C.	0.0	N.C.
EIDER	0.0	N.C.	0.0	N.C.		0.0	N.C.	0.0	N.C.
SCOTER	0.0	N.C.	0.0	N.C.		0.0	N.C.	0.0	N.C.
RUDDY DUCK	135.2	+21	133.8	+1		1.3	-54	5.2	-75
MERGANSER	0.0	N.C.	.4	-100		0.0	N.C.	0.0	N.C.
SUBTOTAL	135.2	+21	134.2	+1		1.3	-54	5.2	-75
TOTAL DUCKS	3,982.0	+32	3,011.7	+32		11.3	-50	45.8	-75
COOTS									
AMERICAN COOT	1,386.6	+265	305.3	+354					
GRAND TOTAL	5,368.6	+58	3,317.0	+62					

TABLE B-9. SOUTH DAKOTA--1979 WATERFOWL BREEDING GROUND SURVEY RESULTS.

	WATERFOWL BREEDING PAIR SURVEY (NUMBERS IN THOUSANDS)					WATERFOWL PRODUCTION SURVEY (NUMBERS IN THOUSANDS)			
	1979	% CHANGE FROM 1978	1969-1978 AVERAGE	% CHANGE FROM AVERAGE		1979	% CHANGE FROM 1978	1969-1978 AVERAGE	% CHANGE FROM AVERAGE
MAY PONDS	367.8	-14	381.6	-4	JULY PONDS	213.3	-13	247.0	-14
					DUCK BROOD INDEX	28.7	-37	32.4	-11
					AVG. BROOD SIZE	5.146	+19	5.027	+2
	BREEDING POPULATION ESTIMATES					LATE-NESTING INDEXES			
DUCKS:									
DABBLERS:									
MALLARD	482.9	-10	424.8	+14		7.4	-24	12.8	-42
BLACK DUCK	0.0	N.C.	0.0	N.C.		0.0	N.C.	0.0	N.C.
GADWALL	147.5	-37	160.5	-8		2.2	-69	7.2	-69
AMERICAN WIGEON	72.1	-72	112.6	-36		1.6	-30	2.1	-24
GREEN-WINGED TEAL	31.4	-52	53.4	-41		.3	-57	.6	-50
BLUE-WINGED TEAL	1,041.5	-19	736.5	+41		.8	-84	6.2	-87
NORTHERN SHOVELER	361.7	-14	172.1	+110		.3	-63	.6	-50
PINTAIL	318.0	-53	304.3	+5		.7	-83	3.1	-77
SUBTOTAL	2,455.1	-29	1,964.2	+25		13.3	-55	32.6	-59
DIVERS:									
REDHEAD	53.5	-65	56.3	-5		0.0	-100	.8	-100
CANVASBACK	8.3	-54	9.9	-16		0.0	-100	.1	-100
SCAUP	42.5	-39	35.4	+20		0.0	-100	.2	-100
RING-NECKED	4.3	-7	1.8	+139		0.0	N.C.	0.0	N.C.
AMERICAN GOLDENEYE	0.0	-100	.2	-100		0.0	N.C.	0.0	N.C.
BUFFLEHEAD	1.4	+250	.2	+600		0.0	N.C.	0.0	N.C.
SUBTOTAL	110.0	-55	103.8	+6		0.0	-100	1.1	-100
MISCELLANEOUS:									
OLDSQUAW	0.0	N.C.	0.0	N.C.		0.0	N.C.	0.0	N.C.
EIDER	0.0	N.C.	0.0	N.C.		0.0	N.C.	0.0	N.C.
SCOTER	0.0	N.C.	0.0	N.C.		0.0	N.C.	.1	-100
RUDDY DUCK	21.3	-48	63.3	-66		.8	-62	2.2	-64
MERGANSER	1.6		0.0			0.0	N.C.	0.0	N.C.
SUBTOTAL	22.9	-44	63.3	-64		.8	-62	2.3	-65
TOTAL DUCKS	2,588.0	-31	2,131.3	+21		14.1	-61	36.0	-61
COOTS									
AMERICAN COOT	358.8	+62	139.6	+157					
GRAND TOTAL	2,946.8	-26	2,270.9	+30					

Table B-10. Minnesota--Estimated number of breeding ducks in the spring of 1979.

Species	Unadjusted population index	Visibility factor	Adjusted population index	Percentage change from 1978
Mallard	73,226	2.70	198,000	+ 5
Blue-winged teal	49,919	4.54	227,000	-11
Other ducks	46,745	3.70	173,000	+ 2
Total	169,890		598,000	- 3

Table B-11. Breeding population estimates for ducks in Minnesota in recent years based on aerial censuses corrected for visibility.

Year	Mallard	Blue-winged teal	All ducks
1970	111,000	153,000	316,000
1971	96,000	153,000	331,000
1972	69,000	100,000	258,000
1973	104,000[a]	136,000[a]	423,000[b]
1974	98,000[a]	112,000[a]	404,000[b]
1975	146,000	163,000	490,000
1976	152,000	387,000	697,000
1977	218,000	219,000	576,000
1978	189,000	256,000	615,000
1979	198,000	227,000	598,000

[a] Procedural changes in data compilation initiated in 1975 have been used for revision of raw data in these years. Values represented here differ slightly from previous years.

[b] Total duck figures do not reflect the changes noted in footnote "a".

Table B-12. California--Estimated total nesting pairs and fall population indices in the Sacramento Valley, 1976-1979.

Species	Estimated total nesting pairs				Fall population indices			
	1976	1977	1978	1979	1976	1977	1978	1979
Dabblers								
Mallard	26,520	38,000	30,360	33,760	110,760	158,700	126,800	141,210
Gadwall	440	840	720	680	2,200	4,200	3,600	3,400
Cinnamon teal	2,200	3,960	2,080	3,960	8,220	14,780	7,770	14,790
Northern shoveler		80	80	320		360	360	1,430
Pintail	480	1,080	880	1,240	1,850	4,160	3,390	4,770
Subtotal	29,640	43,960	34,120	39,960	123,030	182,200	141,920	165,600
Divers								
Canvasback	160	40			720	180		
Redhead			240	280			1,080	1,250
Scaup								
Ruddy duck	240		200	120	1,150		900	540
Subtotal	400	40	440	400	1,870	180	1,980	1,790
Miscellaneous	40	280	120	80	180	1,250	540	360
Total ducks	30,080	44,280	34,680	40,440	125,080	183,630	144,440	167,750
Coot	22,440	34,680	6,120	10,200	103,400	159,800	28,200	47,000

Table B-13. California--Estimated total nesting pairs and fall population indices for the Suisun Marsh, 1976-1979.

	Estimated total nesting pairs				Fall population indices			
Species	1976	1977	1978	1979	1976	1977	1978	1979
Dabblers								
Mallard	1,370	1,380	2,240	3,170	5,700	5,750	7,830	13,160
Gadwall	160	330	560	620	800	1,670	2,800	3,060
Cinnamon teal	240	330	460	820	900	1,250	1,690	3,030
Northern shoveler	60	10	30	160	260	60	130	720
Pintail	60	30	110	60	220	100	410	210
Subtotal	1,890	2,080	3,400	4,830	7,880	8,330	12,860	20,180
Divers								
Redhead								
Ruddy duck			20				60	
Subtotal			20				60	
Miscellaneous								
Total ducks	1,890	2,080	3,420	4,830	7,880	8,330	12,920	20,180
Coot	560	1,600	260	100	2,580	7,350	1,170	430

Table B-14. California--Estimated total nesting pairs and fall population indices for the North San Joaquin Valley (Grasslands), 1976-1979.

Species	Estimated total nesting pairs				Fall population indices			
	1976	1977	1978	1979	1976	1977	1978	1979
Dabblers								
Mallard	1,470	1,590	2,230	1,740	4,580	5,170	7,240	5,650
Gadwall	710	840	900	1,080	2,230	2,650	2,820	3,380
Cinnamon teal	820	890	1,400	1,600	2,550	2,790	4,390	5,030
Northern shoveler	120	180	190	160	360	570	570	510
Pintail	120	140	320	270	350	430	1,000	830
Subtotal	3,240	3,640	5,040	4,850	10,070	11,610	16,020	15,400
Divers								
Canvasback				10				20
Redhead	80	20	60	80	240	60	180	220
Ruddy duck	140	40	290	410	390	100	800	1,260
Subtotal	220	60	350	500	630	160	980	1,500
Miscellaneous			10				10	
Total ducks	3,460	3,700	5,400	5,350	10,700	11,770	17,010	16,900
Coot	2,890	5,500	1,540	930	15,730	29,960	8,390	5,070

Table B-15. California--Estimated total nesting pairs and fall population indices for the South Joaquin Valley, 1976-1979.

Species	Estimated total nesting pairs				Fall population indices			
	1976	1977	1978	1979	1976	1977	1978	1979
Dabblers								
Mallard	830	800	1,130	460	2,290	2,200	3,100	1,270
Gadwall	60	130	180	90	150	360	490	230
Cinnamon teal	180	170	490	170	470	470	1,340	450
Northern shoveler	20		220	10	40		590	30
Pintail	90	150	3,000	40	250	410	8,260	120
Subtotal	1,180	1,250	5,020	770	3,200	3,440	13,780	2,100
Divers								
Canvasback			10				20	
Redhead		20	10	10		40	20	20
Ruddy duck			10				20	
Scaup		40	160	30		10	320	80
Subtotal		60	190	40		150	380	100
Miscellaneous			10				20	
Total ducks	1,180	1,310	5,220	810	3,200	3,590	14,180	2,200
Coot	1,620	1,490	3,010	140	8,760	8,100	16,410	740

Table B-16. California--Estimated total nesting pairs and fall population indices for Northeastern California, 1976-1979.

Species	Estimated total nesting pairs				Fall population indices			
	1976	1977	1978	1979	1976	1977	1978	1979
Dabblers								
Mallard	4,710	4,360	2,760	3,920	30,610	28,340	17,930	25,480
Gadwall	1,020	1,140	600	1,150	8,030	8,960	4,710	9,020
Cinnamon teal	970	1,140	780	920	6,280	7,090	5,060	5,970
Northern shoveler	140	220	200	180	870	1,350	1,210	1,070
Pintail	900	730	1,940	1,900	5,160	4,220	11,140	10,900
Subtotal	7,740	7,590	6,280	8,070	50,950	49,960	40,050	52,440
Divers								
Canvasback	70	30	10	60	320	130	60	280
Redhead	340	930	480	540	2,310	5,360	3,280	3,720
Scaup	70	250	150	230	410	1,550	830	1,380
Ruddy duck	110	200	140	80	620	1,150	760	440
Subtotal	590	1,410	780	910	3,660	8,190	4,930	5,820
Miscellaneous	110	140	220	240	550	690	1,080	1,180
Total ducks	8,440	9,140	7,280	9,220	55,160	58,840	46,060	59,440
Canada goose	510	425	780	840	15,330[a]	17,880[b]	18,000[c]	18,070[d]
Coot	1,160	2,030	1,360	1,020	6,950	12,170	8,140	6,110

[a] Includes 12,130 non-breeders.

[b] Includes 14,780 non-breeders.

[c] Includes 12,650 non-breeders.

[d] Includes 12,470 non-breeders.

Table B-17. California--Estimated total nesting pairs and fall population indices for the Klamath Basin, 1976-1979.

Species	Estimated total nesting pairs				Fall population indices			
	1976	1977	1978	1979	1976	1977	1978	1979
Dabblers								
Mallard	2,050	1,180	1,300	2,660	13,130	7,730	8,140	13,660
Gadwall	1,540	2,130	2,540	3,030	10,570	14,840	19,360	21,270
Cinnamon teal	3,660	3,070	1,850	2,720	23,790	19,280	12,570	17,230
Northern shoveler	110	310	440	870	680	1,970	2,680	5,460
Pintail	100	120	230	310	670	640	1,540	1,800
Subtotal	7,460	6,810	6,360	9,590	48,840	44,460	44,290	63,420
Divers								
Canvasback	60	50	110	100	300	400	620	740
Redhead	1,050	840	480	770	6,230	5,230	3,450	5,110
Scaup	80	300	430	590	470	1,870	4,030	3,880
Ruddy duck	740	950	1,020	970	4,290	4,800	5,560	5,550
Subtotal	1,930	2,140	2,040	2,430	11,290	12,300	13,660	15,280
Miscellaneous	80	90	390	120	490	480	2,350	680
Total ducks	9,470	9,040	8,790	12,140	60,620	57,240	60,300	79,380
Canada goose	420	710	580	430	3,250[a]	3,780[b]	3,650[c]	2,330[d]
Coot	5,400	3,160	4,970	2,940	26,350	17,320	24,800	15,790

[a] Includes 1,320 non-breeders.

[b] Includes 1,080 non-breeders.

[c] Includes 850 non-breeders.

[d] Includes 310 non-breeders.

Table B-18. California--Estimated total nesting pairs and fall population indices for the entire State, 1976-1979.

Species	Estimated total nesting pairs				Fall population indices			
	1976	1977	1978	1979	1976	1977	1978	1979
Dabblers								
Mallard	36,950	47,310	40,020	45,710	167,070	207,890	171,040	204,430
Gadwall	3,930	5,410	5,500	6,650	23,980	32,680	33,780	40,360
Cinnamon teal	8,070	9,560	7,060	10,190	42,210	45,660	32,820	46,500
Northern shoveler	450	800	1,160	1,700	2,210	4,310	5,540	9,220
Pintail	1,750	2,250	6,480	3,820	8,500	9,960	25,740	18,630
Subtotal	51,150	65,330	60,220	68,070	243,970	300,500	268,920	319,140
Divers								
Canvasback	130	80	130	170	620	530	700	1,040
Redhead	1,630	1,850	1,270	1,680	9,500	10,870	8,010	10,320
Scaup	150	550	590	820	880	3,420	4,880	5,260
Ruddy duck	1,230	1,230	1,830	1,610	6,450	6,160	8,400	7,870
Subtotal	3,140	3,710	3,820	4,280	17,450	20,980	21,990	24,490
Miscellaneous	230	510	750	440	1,220	2,420	4,000	2,220
Total ducks	54,520	69,550	64,790	72,790	262,640	323,900	294,910	345,850
Canada goose	930	1,135	1,360	1,270	18,580	21,660	21,650	20,400
Coot	34,070	48,460	17,260	15,330	163,770	234,700	87,110	75,140

Table B-19. Colorado--Summary of duck breeding population estimates in selected areas, 1979.

Area	Total estimated breeding pairs: 1979	1978	Long-term average[a]	Percent change: From 1978	From long-term average
San Luis Valley	17,140	28,524	27,900	-40	-39
North Park[b]	16,882	9,633	16,435	+75	+ 2
South Platte Valley	9,794	19,182	7,313	-49	+34
Cache la Poudre Valley	5,018	12,674	4,054	-60	+24
Yampa Valley	1,897	1,708	2,686	+11	-29
Brown's Park	953	805	1,126	+18	-15
Total	51,624	72,526	59,514	-29	-13

[a] San Luis Valley and North Park averages are based on results of 1964 through 1975 and 1968 through 1978 surveys, respectively, because of changes in survey methods utilized prior to those dates. Figures for other areas are 23-year averages.

[b] Aerial counts corrected by species from visibility ratios obtained in the San Luis Valley.

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Table B-20. Colorado--Species composition of 1979 duck breeding pair population.

Species	Number of breeding pairs			Percent species composition		
	1979	1978	1954-78 average[a]	1979	1978	1954-1978 average
Mallard	15,456	21,313	27,580	30	29	51
Blue-winged and cinnamon teal	6,349	9,267	5,913	12	13	11
Gadwall	4,838	14,311	5,676	9	20	10
Pintail	3,297	3,557	3,605	6	5	7
Green-winged teal	5,719	12,739	3,178	11	18	6
Northern shoveler	2,891	5,866	3,545	6	8	7
American wigeon	1,204	978	1,131	2	1	2
Redhead	9,707	543	2,237	19	1	4
Other divers	2,163	3,952	1,664	4	5	3
Total	51,624	72,526	54,529			

[a] Species composition computed from data from all areas for the 23-year period regardless of changes in survey method.

Table B-21. Colorado--Number of Canada geese observed, and estimated production in Moffat County, 1979.

Area	Nesting pairs	Non-nesting birds	Total adults	Estimated No. goslings[a]	Total birds
Yampa River					
Craig-Juniper Springs	17	288	322	71	393
Juniper Springs-Cross Mountain	21	124	166	84	250
Lilly Park	12	143	167	44	211
Subtotal	50	555	655	199	854
Green River					
Brown's Park[b]	58				
Dinosaur National Monument	39	139	217	172	389
Subtotal	97				
Little Snake River	27	180	234	104	338
Total	174				

[a] Calculated using average brood size observed and number of successful nests.

[b] Data for Brown's Park incomplete.

Table B-22. Colorado--Total Canada geese observed, Moffat County, 1979.

Area	1979	1978	1967-1978 average	Percent change From 1978	Percent change From 1967-1978 average
Yampa River	854	586	577	+46	+48
Green River Brown's Park		527	364		
Dinosaur National Monument[a]	389	406	386	- 4	+ 1
Little Snake River	338	191	287	+77	+18
Total		1,710	1,614	+34[b]	+27[b]

[a] Not surveyed until 1970

[b] Percent change does not include Green River, Brown's Park data.

Table B-23. Colorado--Estimated number of Canada goose goslings, Moffat County, 1979.

Area	1979	1978	1967-1978 average	Percent change From 1978	Percent change From 1967-1978 average
Yampa River	199	200	172	- 1	+16
Green River Brown's Park		285	148		
Dinosaur National Monument[a]	172	198	159	-13	+ 8
Little Snake River	104	90	93	+16	+12
Total		773	572	- 3[b]	+12[b]

[a] Not surveyed until 1970.

[b] Percent change does not include Green River, Brown's Park data.

Table B-24. Colorado--Number of adult Canada geese observed in north central Colorado production trend areas, 1979.

Area	Number of geese 1979	1978	1969-1978 average	Percent change From 1978	From 1969-1978
Wellington	711	643	725	+11	- 2
Ft. Collins	663	850	709	-22	- 7
Loveland	374	166	218	+125	+72
Boulder	286	383	573	-25	-50
Denver	1,147	1,228	1,227	- 7	- 7
Total	3,181	3,270	3,452	- 3	- 8

Table B-25. Colorado--Number of Canada goose goslings produced in north central Colorado production trend areas, 1979.

Area	Number of goslings 1979	1978	1969-1978 average	Percent change From 1978	From 1969-1978
Wellington	290	175	248	+66	+17
Ft. Collins	378	276	284	+37	+33
Loveland	158	133	100	+19	+58
Boulder	181	166	211	+ 9	-14
Denver	310	156	278	+99	+12
Total	1,317	906	1,211	+45	+18

Table B-26. Nebraska--Sandhills breeding population composition and change, 1979[a].

Species	1979 total	1978 total	Percent change	Percent composition
Mallard	33,587	29,043	+ 16	23
Blue-winged teal	46,938	44,042	+ 7	33
Green-winged teal	491	520	- 6	TR
Pintail	9,448	9,818	- 4	7
Gadwall	20,241	14,960	+ 35	14
Shoveler	19,735	18,047	+ 9	14
Wood duck	246			TR
Redhead	6,632	3,298	+101	5
Canvasback	2,948	729	+304	2
Scaup	1,474	5,237	- 72	1
Ruddy	2,049	312	+557	1
Total	143,789	126,006	+ 14	100

[a] Based on data from aerial surveys.

Table B-27. Nebraska--Rainwater Basin breeding population composition and change, 1979[a].

Species	1979 total	1978 total	Percent change	Percent composition
Mallard	4,984	6,442	+ 23	34
Blue-winged teal	7,313	3,395	+115	49
Pintail		98		
Gadwall	816	363	+125	6
Shoveler	1,216	3,130	- 61	8
Baldpate		363		
Redhead	297			2
Scaup	208	182	+ 14	1
Total	14,834	13,973	+ 6	100

[a] Based on data from aerial surveys.

Table B-28. Washington--Duck and coot breeding population indexes by species and stratum for 1979, 1978, and the 1969-78 average.

Species	W. Wash.	Potholes	Irrig.	Highlands	1979	1978	1969-78 Average	% Change from Average	% Change from 1978
Dabblers									
Mallard	12,500	22,340	25,450	7,110	67,400	48,660	55,390	+22	+39
Gadwall		8,540	1,380	170	10,090	6,150	6,130	+65	+64
Wigeon		8,040	140	760	8,940	8,500	9,030	- 1	+ 5
Green-winged teal	30	5,610	430	900	6,970	6,180	6,590	+ 6	+13
Blue-winged and cinnamon teal	1,490	15,480	10,210	2,260	29,440	22,900	36,200	-19	+29
Shoveler		5,260	600	170	6,030	4,540	6,190	- 3	+33
Pintail	30	4,990	340	70	5,430	7,360	7,500	-28	-26
Wood duck	7,760		1,140	80	8,980	6,750	7,120	+26	+33
Subtotal	21,810	70,260	39,690	11,520	143,280	111,040	134,150	+ 7	+29
Divers									
Redhead		12,230	4,630	1,020	17,880	12,350	15,190	+18	+45
Canvasback		30			30	270	400	-93	-89
Scaup		5,840	1,010	600	7,450	8,670	8,170	- 9	-14
Ringnecked duck		1,700	430	890	3,020	5,120	3,480	-13	-41
Goldeneye		780		1,660	2,440	2,590	2,840	-14	- 6
Bufflehead		170		40	210	1,090	490	-57	-81
Ruddy duck		8,950	3,370	1,020	13,340	13,200	12,460	+ 7	+ 1
White-winged scoter				40	40				
Subtotal		29,700	9,440	5,270	44,410	43,290	43,030	+ 3	+ 3
Mergansers									
American	70				70	480	1,440	-95	-85
Hooded	190				190	520	230	-17	-63
Subtotal	260				260	1,000	1,670	-84	-74
Total ducks	22,070	99,960	49,130	16,790	187,950	155,970	178,850	+ 5	+21
Coot	3,630	31,690	15,030	5,970	56,320	31,540	38,850	+45	+79
Grand total	25,700	131,650	64,160	22,760	244,270	187,510	217,700	+12	+30

Table B-29. Washington--Waterfowl production indexes for 1979, 1978, and the 1969-78 average.

	Year			Percent change	
Species	1979	1978	1969-78 average	From average	From 1978
Dabblers					
Mallard	232,100	131,100	144,500	+ 61	+ 77
Gadwall	34,400	12,400	13,100	+163	+177
Wigeon	29,600	16,900	27,700	+ 7	+ 75
Green-winged teal	20,200	12,400	16,100	+ 25	+ 63
Blue-winged and cinnamon teal	92,700	48,200	93,800	NC	+ 94
Shoveler	21,700	7,500	19,100	+ 14	+189
Pintail	21,300	13,700	22,800	- 7	+ 55
Wood duck	23,900	25,100	20,100	+ 19	- 5
Subtotal	476,900	267,300	357,200	+ 34	+ 78
Divers					
Redhead	43,500	23,000	31,000	+ 40	+ 89
Canvasback	100	600	700	- 86	- 83
Scaup	16,100	12,400	14,700	+ 10	+ 30
Ring-necked duck	5,600	6,200	5,600	NC	- 10
Goldeneye	6,500	4,000	8,700	- 25	+ 63
Bufflehead	500	1,400	600	- 17	- 64
Ruddy duck	32,700	23,300	23,400	+ 40	+ 40
White-winged scoter	TR				
Subtotal	105,000	70,900	84,700	+ 24	+ 48
Mergansers					
American	900	3,400	3,200	- 72	- 74
Hooded	200	500	500	- 60	- 60
Total ducks	583,000	342,000	445,600	+ 31	+ 70
Canada goose	12,900	14,000	12,300	+ 5	- 8
Coot	93,400	48,700	58,900	+ 59	- 92
Grand total	689,300	404,800	516,800	+ 33	+ 70

Table B-30. Wisconsin--Wetland densities by r[illegible] 1978-1979.

Wetland type	SE/central 1979	SE/central 1978	Northern high 1979	Northern high 1978	Northern low 1979	Northern low 1978
	Wetlands recorded per square kilometer					
I, II	6	3	4	4	4	2
III	1	1	6	1	TR	TR
IV, V	3	2	3	3	2	2
VII, VIII	2	1	5	2	5	2
Streams	2	2	3	2	4	3
Ditches	3	2	TR	TR	1	1

Table B-31. Wisconsin--Adjusted breeding duck population estimate for 1979, 1978, and the 1973-78 average.

Species	SE/central 1979	SE/central 1978	Northern high 1979	Northern high 1978	Northern low 1979	Northern low 1978	All regions 1979	All regions 1978	1973-78 average
	Number of breeding ducks[b]								
Mallard	52,800	30,000	30,000	28,300	12,000	21,200	95,200	79,500	84,700
Blue-winged teal	96,500	62,300	21,800	20,300	12,200	18,300	130,500	100,800	164,400
Other[a]	13,300	22,900	8,200	30,700	75,400	6,900	96,900	60,500	52,800
Total	162,600	115,200	60,000	79,300	100,000	46,400	322,600	240,800	301,400
Percent change 1978-1979	+41		-24		+116		+34		

[a] Included are wood duck, black duck, northern shoveler, pintail, ring-necked duck, redhead green-winged teal, gadwall, American wigeon, ruddy duck, and hooded merganser.

[b] All estimates rounded to nearest hundred.

APPENDIX C. WATERFOWL HARVEST SURVEY TABLES

Table C-1. Average differences between the waterfowl harvest by in-State duck stamp buyers regardless of State of kill, and the harvest by in-State hunters regardless of State of purchase (1966-75).

Flyway/State	Duck harvest by State of purchase	Duck harvest by State of kill	Duck harvest by Percent change	Goose harvest by State of purchase	Goose harvest by State of kill	Goose harvest by Percent change
Atlantic Flyway						
Connecticut	39,700	39,712	NC	2,560	1,745	-32
Delaware	48,120	43,[illegible]34	- 9	32,310	32,097	- 1
District of Columbia	6,900	0	-100	4,830	0	-100
Florida	221,780	225,505	+ 2	1,060	89	-92
Georgia	59,100	56,499	- 4	600	75	-87
Maine	84,960	88,869	+ 5	1,440	1,612	+12
Maryland	124,470	128,967	+ 4	109,880	129,296	+18
Massachusetts	91,770	86,600	- 6	5,180	4,900	- 5
New Hampshire	24,270	24,790	+ 2	930	868	- 7
New Jersey	130,620	129,453	- 1	31,510	26,196	-17
New York	294,720	291,263	- 1	42,740	42,005	- 2
North Carolina	116,880	126,214	+ 8	8,850	10,566	+19
Pennsylvania	125,850	128,496	+ 2	18,550	15,566	-16
Rhode Island	14,410	15,201	+ 5	930	780	-16
South Carolina	118,530	123,571	+ 4	1,330	523	-61
Vermont	30,640	33,356	+ 9	1,480	1,703	+15
Virginia	107,200	97,086	- 9	13,250	9,895	-25
West Virginia	4,880	5,532	+1	180	104	-42
Flyway total	1,644,780	1,644,848	NC	277,550	278,031	NC
Mississippi Flyway						
Alabama	67,450	68,526	+ 2	2,770	2,564	- 7
Arkansas	427,270	476,553	+12	2,510	1,628	-35
Illinois	341,870	331,984	- 3	35,720	37,558	+ 5
Indiana	79,830	76,066	- 5	5,330	4,107	-23
Iowa	280,250	277,022	- 1	42,800	45,111	+ 5
Kentucky	38,450	40,943	+ 6	9,010	8,752	- 3
Louisiana	1,257,260	1,254,261	NC	97,540	90,801	- 7
Michigan	341,970	348,354	+ 2	21,230	21,517	+ 1
Minnesota	914,420	890,469	- 3	50,000	41,157	-18
Mississippi	173,930	170,264	- 2	2,780	1,940	-30
Missouri	227,710	227,548	NC	66,030	71,023	+ 8
Ohio	125,120	118,946	- 5	8,750	8,066	- 8
Tennessee	175,710	129,341	-26	6,350	5,747	- 9
Wisconsin	550,060	568,463	+ 3	47,770	49,798	+ 4
Flyway total	5,001,240	4,978,740	NC	398,500	389,757	- 2
Central Flyway						
Colorado	137,500	139,465	+ 1	18,470	20,147	+ 9
Kansas	303,820	307,169	+ 1	27,240	22,646	-17
Montana	37,060	38,012	+ 3	3,830	4,108	+ 7
Nebraska	254,490	250,645	- 2	28,610	22,389	-22
New Mexico	30,810	30,118	- 2	1,890	1,978	+ 5
North Dakota	339,840	356,051	+ 5	83,860	92,181	+10
Oklahoma	183,600	188,027	+ 2	12,220	13,239	+ 8
South Dakota	231,120	262,063	+13	55,490	56,420	+ 2
Texas	857,060	852,963	NC	160,150	167,647	+ 5
Wyoming	32,600	32,214	- 1	1,970	1,838	- 7
Flyway total	2,437,550	2,456,727	+ 1	393,740	402,589	+ 2
Pacific Flyway						
Arizona	67,090	72,155	+ 8	1,810	2,946	+63
California	1,960,170	1,959,827	NC	226,260	226,442	NC
Colorado	22,770	24,834	+ 9	590	369	-37
Idaho	286,320	295,899	+ 3	14,410	14,951	+ 4
Montana	123,660	127,472	+ 3	6,130	6,030	- 2
Nevada	104,310	103,491	- 1	7,580	6,881	- 9
New Mexico	4,480	5,607	+25	100	41	-59
Oregon	375,020	374,470	NC	42,250	42,440	NC
Utah	312,080	304,918	- 2	11,960	11,343	- 5
Washington	532,780	530,708	NC	39,760	39,232	- 1
Wyoming	10,530	11,307	+ 7	1,030	1,231	+20
Flyway total	3,799,170	3,810,688	NC	351,870	351,906	NC
Alaska	69,080	65,280	- 6	12,340	11,775	- 5
United States total[a]	12,951,820	12,956,283	NC	1,434,060	1,433,969	NC

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[a] The difference between United States totals is due to rounding.

Table C-2. Calculating the size and geographic distribution of the waterfowl harvest.

1. Expanding Means

Seasonal zone mean[a,b,c] × Zone stamps × Philatelic response factor × Response bias adjustment[d] × Junior hunter expansion[e] × Questionaire change adjustment = Zone total[f]

2. State Duck Harvest

Zone total duck harvest ÷ Total zone duck wings[a,c] = Zone duck harvest per zone wing → Code this value into each wing record → Resort wing records by State of kill and sum values

3. Sea Duck Harvest (ME,NH,MA,RI,CT,NY,MD only)

Sum zone sea duck harvest → Total sea duck harvest by State of purchase ÷ Total sea duck wings by State of purchase = Harvest per wing by State of purchase → Code this value into each wing record → Resort wing records by State of kill and sum values

4. Teal Season Duck Harvest (teal season states only)

Sum zone teal season harvest → Total teal season duck harvest by State of purchase ÷ Total teal season wings by State of kill = Considered as harvest per wing by State of kill → Code this value into each wing record → Sort wing records by State of kill and sum values

5. State Goose Harvest

Sum zone goose harvest → Total goose harvest by State of purchase ÷ Total goose tails by State of purchase = Harvest per tail by State of purchase → Code this value into each tail record → Resort tail records by State of kill and sum values

6. State Coot Harvest, Hunter Days, or Unretrieved Kill

Sum zone totals = Total by State of purchase

No further computations are made.

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[a] In all but seven Atlantic Flyway states, means and wings for ducks and sea ducks are combined.

[b] September teal season duck means are adjusted downward based on past comparisons of questionnaires sent to all potential hunters compared with questionnaires sent only to potential teal season hunters.

[c] In states having September teal seasons, adjusted means and wings for that season are subtracted from retrieved duck means and total zone duck wings.

[d] There is no bias adjustment for unretrieved kill or hunter days.

[e] There is no expansion for junior hunters for sea ducks in ME, NH, MA, RI, CT, NY only.

[f] Total duck harvest for each state of kill is the sum of harvest values for items 2, 3, and 4.

Table C-3. Factors used to adjust survey statistics for memory and prestige bias.

Estimate	Memory and prestige response bias factors			
	Atlantic Flyway	Mississippi Flyway	Central Flyway	Pacific Flyway and Alaska
Ducks bagged (including sea ducks)	0.86925	0.77656	0.73902	0.78952
Geese bagged	0.80428	0.84800	0.86838	0.85159
Coots bagged	0.60692	0.63668	0.78878	0.59248

Table C-4. Factors used to adjust survey statistics to include the activities of junior hunters.

Estimate	Junior hunter adjustment factors			
	Atlantic Flyway	Mississippi Flyway	Central Flyway	Pacific Flyway and Alaska
Ducks bagged (including sea ducks)	1.03621	1.04655	1.06055	1.04985
Geese bagged	1.02402	1.03369	1.04110	1.04508
Coots bagged	1.08302	1.09034	1.10147	1.09415
Days hunted	1.05174	1.07003	1.08559	1.08708
Ducks lost	1.03641	1.05699	1.07053	1.06152
Geese lost	1.01573	1.03738	1.07067	1.07411
Coots lost	1.08247	1.10282	1.10400	1.10685

Table C-5. Total retrieved (by species) and unretrieved duck and coot kill in the United States during the 1977 and 1978 hunting seasons (retrieved kill estimates adjusted for response bias; all estimates include kill by junior hunters).

Species	Season	Atlantic Flyway	Mississippi Flyway	Central Flyway	Pacific Flyway	Alaska	United States total
Retrieved duck kill							
Mallard	1977	388,100	2,270,200	789,700	987,900	32,200	4,468,100
	1978	442,400	2,257,100	1,059,800	1,265,600	40,800	5,065,600
	% change	+14	- 1	+34	+28	+27	+13
Domestic mallard	1977	8,300	5,200	100	800		14,400
	1978	7,600	5,800	600	1,500		15,500
	% change	- 8	+12	+500	+88		+ 8
Black duck	1977	195,000	78,900	200			274,100
	1978	262,300	78,800				337,100
	% change	+35	- 5	-100			+23
Black X mallard	1977	10,900	4,500				15,400
	1978	15,600	5,800	600			22,000
	% change	+43	+29	+			+43
Mottled duck	1977	11,700	46,300	49,800			107,700
	1978	18,300	52,200	49,800			120,300
	% change	+56	+13	NC			+12
Gadwall	1977	33,500	376,800	239,800	86,900	700	737,700
	1978	40,300	493,200	309,100	133,600	600	976,800
	% change	+20	+31	+29	+54	-14	+32
American wigeon	1977	74,300	260,400	204,100	373,300	11,900	924,000
	1978	78,200	337,400	210,200	411,500	16,200	1,053,600
	% change	+ 5	+30	+ 3	+10	+36	+14

Table C-5. Continued.

Species	Season	Atlantic Flyway	Mississippi Flyway	Central Flyway	Pacific Flyway	Alaska	United States total
Green-winged teal	1977	119,900	694,300	469,300	563,900	17,000	1,864,400
	1978	157,500	662,400	457,100	701,400	18,200	1,996,700
	% change	+31	- 5	- 3	+24	+ 7	+ 7
Blue-winged and cinnamon teal	1977	48,000	472,400	135,200	79,600	700	735,900
	1978	89,000	584,300	209,100	85,000	100	967,500
	% change	+85	+24	+55	+ 7	-86	+31
Northern shoveler	1977	10,100	121,500	80,500	167,300	5,900	385,300
	1978	14,500	171,900	129,500	214,000	5,200	535,500
	% change	+44	+41	+61	+28	-12	+39
Pintail	1977	50,600	213,600	179,900	540,800	26,900	1,011,800
	1978	35,700	210,700	239,400	851,700	18,900	1,356,400
	% change	-29	- 1	+33	+57	-30	+34
Wood duck	1977	342,800	578,900	66,700	38,600		1,027,000
	1978	407,400	741,800	79,600	46,500		1,275,300
	% change	+19	+28	+19	+20		+24
Redhead	1977	8,500	28,100	41,800	26,600	200	105,200
	1978	8,600	63,500	58,600	37,100	100	167,900
	% change	+ 1	+126	+40	+39	-50	+60
Canvasback	1977	7,000	24,800	10,800	32,500	400	75,500
	1978	5,500	20,400	7,000	31,100	300	64,200
	% change	-21	-18	-35	- 4	-25	-15
Greater scaup	1977	71,400	26,700	3,800	29,200	1,400	132,500
	1978	28,500	20,700	1,800	7,800	2,300	61,000
	% change	-60	-22	-53	-73	+64	-54

Table C-5. Continued.

Species	Season	Atlantic Flyway	Mississippi Flyway	Central Flyway	Pacific Flyway	Alaska	United States total
Lesser scaup	1977	199,000	364,500	75,700	45,300	2,300	686,800
	1978	39,600	177,400	59,200	38,800	1,800	316,900
	% change	-80	-51	-22	-14	-22	-54
Ring-necked duck	1977	99,800	253,500	62,600	21,300	400	437,700
	1978	126,200	302,900	57,500	32,700	200	519,500
	% change	+26	+19	- 8	+54	-50	+19
Goldeneye	1977	18,700	21,200	5,900	25,400	4,000	75,300
	1978	24,000	30,400	8,600	31,800	4,400	99,300
	% change	+28	+43	+46	+25	+10	+32
Bufflehead	1977	69,700	42,700	12,300	27,000	2,800	154,500
	1978	50,600	50,600	17,800	39,400	5,400	163,800
	% change	-27	+19	+45	+46	+193	+ 6
Ruddy duck	1977	6,000	10,500	3,300	19,200		38,900
	1978	6,900	25,300	5,700	26,300		64,200
	% change	+15	+141	+73	+37		+65
Oldsquaw	1977	8,300	700	100		500	9,600
	1978	6,900	100		600	1,600	9,300
	% change	-17	-86	-100	+	+220	- 3
Eiders	1977	14,500				200	14,700
	1978	15,700	100				15,800
	% change	+ 8	+			-100	+ 7
Scoters	1977	50,200	9,100	900	7,200	300	67,700
	1978	35,000	1,000		5,400	5,300	46,600
	% change	-30	-89	-100	-25	+	-31

Table C-5. Continued.

Species	Season	Atlantic Flyway	Mississippi Flyway	Central Flyway	Pacific Flyway	Alaska	United States total
Hooded merganser	1977	24,500	39,100	3,600	3,500		70,700
	1978	21,100	41,900	3,600	3,100		69,700
	% change	-14	+ 7	NC	-11		- 1
Other mergansers	1977	10,200	10,700	2,000	7,400	100	30,500
	1978	8,000	6,500	3,000	8,400	600	26,500
	% change	-22	-39	+50	+14	+500	-13
Other ducks	1977	900	1,400	1,400	900	500	5,100
	1978	400	2,000	1,600	1,600	2,000	7,700
	% change	-56	+43	+14	+78	+300	+51

Table C-5. Continued.

Species	Season	Atlantic Flyway	Mississippi Flyway	Central Flyway	Pacific Flyway	Alaska	United States total
Total retrieved duck kill	1977	1,881,900	5,956,000	2,439,600	3,084,500	108,300	13,470,300
	1978	1,945,900	6,340,000	2,969,200	3,975,400	124,100	15,354,500
	% change	+ 3	+ 6	+22	+29	+15	+14
Unretrieved duck kill	1977	464,300	1,313,300	444,800	520,600	16,500	2,759,600
	1978	455,300	1,406,100	572,800	654,900	16,500	3,105,600
	% change	- 2	+ 7	+29	+26	NC	+13
Total duck kill	1977	2,346,200	7,269,300	2,884,400	3,605,100	124,800	16,229,900
	1978	2,401,200	7,746,100	3,542,000	4,630,300	140,600	18,460,200
	% change	+ 2	+ 7	+23	+28	+13	+14
Retrieved coot kill	1977	53,600	284,400	40,900	112,900	400	492,200
	1978	78,000	206,900	55,800	100,400	600	641,700
	% change	+46	+43	+36	-11	+50	+30
Unretrieved coot kill	1977	13,000	70,800	16,200	41,500	100	141,600
	1978	19,500	95,200	31,900	39,500	100	186,200
	% change	+50	+34	+97	- 5	NC	+31
Total coot kill	1977	66,600	355,300	57,100	154,400	500	633,800
	1978	97,500	502,100	87,700	139,800	700	827,900
	% change	+46	+41	+54	- 9	+40	+31

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Table C-6. Total retrieved (by species) and unretrieved goose kill in the United States during the 1977 and 1978 hunting seasons (retrieved kill estimates adjusted for response bias; all estimates include kill by junior hunters).

Species	Season	Atlantic Flyway	Mississippi Flyway	Central Flyway	Pacific Flyway	Alaska	United States total
Retrieved goose kill							
Canada goose[a]	1977	466,100	357,600	158,900	185,200	10,700	1,178,500
	1978	327,000	425,900	200,800	252,900	9,100	1,215,700
	% change	-30	+19	+26	+37	-15	+ 3
Snow goose	1977	22,100	44,700	192,300	81,800	600	341,600
	1978	20,100	50,700	132,400	30,900	100	234,200
	% change	- 9	+13	-31	-62	-83	-31
Blue goose	1977	300	82,100	114,000			196,400
	1978		83,200	56,600			139,800
	% change	-100	+ 1	-50			-29
White-fronted goose	1977		18,700	49,200	34,400	1,200	103,400
	1978		33,400	44,200	36,900	1,200	115,600
	% change		+79	-10	+ 7	NC	+12
Brant	1977	600[b]			10,800	1,900	13,300
	1978	600[b]			1,500	800	2,800
	% change	NC			-86	-58	-79
Others and unknown	1977			300[c]	4,200[c]	2,100[d]	6,600
	1978				2,400	3,000[d]	5,400
	% change			-100	-43	+43	-18

Table C-6. Continued.

Species	Season	Atlantic Flyway	Mississippi Flyway	Central Flyway	Pacific Flyway	Alaska	United States Total
Total retrieved kill	1977	489,100	503,100	514,600	316,500	16,500	1,839,800
	1978	347,600	593,200	434,000	324,500	14,100	1,713,400
	% change	-29	+18	-16	+ 3	-15	- 7
Unretrieved kill	1977	74,900	84,600	68,900	43,200	2,600	274,100
	1978	52,200	110,100	58,700	47,000	1,800	269,800
	% change	-30	+30	-15	+ 9	-31	- 2
Total goose kill	1977	564,000	587,700	583,500	359,700	19,100	2,113,900
	1978	399,900	703,300	492,700	371,600	15,900	1,983,300
	% change	-29	+20	-16	+ 3	-17	- 6

[a] Includes all subspecies

[b] Brant season in Atlantic Flyway closed in 1977 and 1978.

[c] Ross' goose.

[d] Emperor goose.

TABLE 7-7--PERCENTAGE SPECIES COMPOSITION OF WATERFOWL HARVESTED, TOTAL NUMBERS HARVESTED, AND ADULT HUNTER STATISTICS IN THE ATLANTIC FLYWAY DURING THE 1977 AND 1978 HUNTING SEASONS.

	CONNECTICUT		DELAWARE		FLORIDA		GEORGIA	
	1977	1978	1977	1978	1977	1978	1977	1978
DUCK SPECIES COMPOSITION								
MALLARD	32.12%	32.34%	41.75%	30.00%	2.77%	2.25%	20.77%	19.79%
DOMESTIC MALLARD	0.36	0.73	1.94	1.53	0.00	0.12	0.20	0.00
BLACK DUCK	20.56	23.42	16.51	19.04	0.67	0.11	1.60	4.15
BLACK X MALLARD	2.49	1.45	0.65	1.91	0.09	0.05	0.51	0.38
MOTTLED DUCK	0.00	0.00	0.00	0.00	4.56	6.00	0.00	0.00
GADWALL	0.36	0.24	0.00	2.67	0.76	1.23	0.30	3.70
AMERICAN WIGEON	0.48	1.14	5.77	0.38	4.82	4.66	0.20	2.20
GREEN-WINGED TEAL	10.13	6.77	7.81	29.91	4.58	7.22	2.58	5.98
BLUE-WINGED/CINNAMON TEAL	0.18	0.00	0.33	0.00	11.41	15.92	0.10	0.24
NORTHERN SHOVELER	0.00	0.00	0.00	1.53	1.63	1.84	0.00	1.15
PINTAIL	1.07	0.00	3.62	2.06	7.87	3.24	0.10	1.14
WOOD DUCK	9.91	8.30	3.58	1.91	9.34	10.79	62.12	56.03
REDHEAD	0.00	0.00	0.33	0.00	1.02	1.93	0.00	0.16
CANVASBACK	0.00	0.81	0.65	1.53	0.61	0.29	0.31	0.26
GREATER SCAUP	6.85	9.19	1.63	0.38	1.83	0.75	0.82	0.15
LESSER SCAUP	0.89	0.73	7.81	0.38	20.90	8.85	5.18	0.72
RING-NECKED DUCK	0.53	0.00	0.00	0.38	22.66	30.61	2.81	2.92
GOLDENEYES	0.36	2.66	0.65	0.76	0.00	0.08	1.67	0.00
BUFFLEHEAD	2.26	5.89	3.58	1.91	1.37	0.83	0.00	0.70
RUDDY DUCK	0.18	0.00	0.00	0.28	0.05	0.82	0.00	0.00
OLDSQUAW	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00
EIDERS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCOTERS	5.01	4.54	2.61	3.05	0.15	0.00	0.00	0.00
HOODED MERGANSERS	0.53	1.39	0.33	0.00	1.99	1.72	0.73	0.33
OTHER MERGANSERS	0.54	0.46	0.33	0.38	0.36	0.38	0.00	0.00
OTHER DUCKS	0.00	0.00	0.00	0.00	0.18	0.04	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
DUCK HARVEST (RETRIEVED KILL)	51,091	33,064	36,576	53,340	256,075	305,230	83,614	74,582
PERCENT CHANGE		-35%		+37%		+19%		-11%
SEASONAL DUCK HARVEST PER ADULT HUNTER	3.55	2.42	3.19	4.82	9.50	10.85	8.54	5.82
PERCENT CHANGE		-33%		+51%		+14%		-11%

GOOSE SPECIES COMPOSITION								
CANADA GOOSE	96.43%	100.00%	99.01%	97.50%	100.00%	0.00%	0.00%	0.00%
SNOW GOOSE	3.57	0.00	0.99	2.50	0.00	0.00	0.00	0.00
BLUE GOOSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHITE-FRONTED GOOSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BRANT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER GEESE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	0.00	0.00	0.00
GOOSE HARVEST (RETRIEVED KILL)	3,847	6,817	49,716	35,216	56	0	0	0
PERCENT CHANGE		+77%		-29%		-100%		0%
SEASONAL GOOSE HARVEST PER ADULT HUNTER	0.43	0.48	4.49	3.32	0.12	0.09	0.20	0.11
PERCENT CHANGE		+12%		-26%		-21%		-48%
COOT HARVEST (RETRIEVED KILL)	256	413	352	287	15,213	26,445	2,147	3,602
PERCENT CHANGE		+61%		-18%		+74%		+68%
SEASONAL COOT HARVEST PER ADULT HUNTER	0.02	0.03	0.03	0.02	0.54	0.88	0.15	0.23
PERCENT CHANGE		+47%		-15%		+61%		+55%
TOTAL HUNTER DAYS	87,827	94,961	112,590	118,575	164,707	191,708	81,615	85,387
PERCENT CHANGE		+8%		+5%		+16%		+5%
DAYS PER ADULT HUNTER	6.04	5.86	8.61	9.35	6.06	6.54	5.80	5.62
PERCENT CHANGE		-3%		+9%		+8%		-3%
TOTAL DUCK STAMPS SOLD	15,023	16,535	12,661	12,779	27,144	28,814	13,800	14,792
PERCENT CHANGE		+10%		+1%		+6%		+7%
PERCENT SOLD TO NON-HUNTERS	7.53%	6.90%	1.45%	5.99%	4.75%	3.29%	3.00%	2.29%
TOTAL ADULT HUNTERS (POTENTIAL)	13,832	15,398	12,477	12,014	25,855	27,866	13,386	14,453
PERCENT CHANGE		+11%		-4%		+8%		+8%
PERCENT ACTIVE ADULT HUNTERS	78.2%	80.1%	87.5%	88.0%	83.6%	85.6%	85.7%	87.7%
PERCENT SUCCESSFUL ADULT HUNTERS	52.7%	53.3%	70.6%	69.8%	70.5%	73.2%	67.0%	68.3%
SAMPLE SIZES								
DUCK WINGS	543	386	306	268	2,246	2,270	510	819
GOOSE TAILS	27	38	490	321	1	0	0	0
QUESTIONNAIRES	307	378	382	370	1,323	1,289	634	686

TABLE C-7--PERCENTAGE SPECIES COMPOSITION OF WATERFOWL HARVESTED, TOTAL NUMBERS HARVESTED, AND ADULT HUNTER STATISTICS IN THE ATLANTIC FLYWAY DURING THE 1977 AND 1978 HUNTING SEASONS--continued.

	MAINE		MARYLAND[a]		MASSACHUSETTS		NEW HAMPSHIRE	
	1977	1978	1977	1978	1977	1978	1977	1978
DUCK SPECIES COMPOSITION								
MALLARD	5.26%	7.02%	34.08%	40.16%	15.53%	12.06%	14.71%	9.92%
DOMESTIC MALLARD	0.24	0.32	1.24	1.16	0.52	0.39	0.00	0.00
BLACK DUCK	25.50	30.92	14.51	22.48	27.08	34.04	24.65	25.65
BLACK X MALLARD	0.66	0.65	0.44	0.75	0.62	1.24	0.00	1.33
MOTTLED DUCK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GADWALL	0.00	0.00	3.07	1.78	0.80	0.00	0.00	0.00
AMERICAN WIGEON	1.08	0.37	2.51	3.78	1.91	2.66	0.00	0.33
GREEN-WINGED TEAL	12.75	12.73	2.23	10.86	4.47	5.59	5.15	7.82
BLUE-WINGED/CINNAMON TEAL	0.90	4.12	0.29	1.33	1.62	0.26	1.20	3.72
NORTHERN SHOVELER	0.00	0.00	0.29	1.05	0.20	0.00	0.00	0.00
PINTAIL	1.00	0.44	2.63	2.30	0.69	0.13	0.00	0.33
WOOD DUCK	12.35	11.53	0.66	4.80	10.60	7.84	31.76	33.90
REDHEAD	0.00	0.00	0.00	0.00	0.50	0.26	0.00	0.00
CANVASBACK	0.00	0.00	0.00	0.00	0.30	1.33	0.00	0.00
GREATER SCAUP	0.00	0.00	1.90	0.33	2.20	2.45	0.00	0.00
LESSER SCAUP	0.52	0.16	20.58	0.08	0.60	0.13	0.49	0.00
RING-NECKED DUCK	4.01	2.60	0.07	0.33	0.76	0.54	3.89	0.33
GOLDENEYES	4.61	3.10	0.50	2.41	1.91	0.96	0.39	0.00
BUFFLEHEAD	9.10	8.10	3.00	3.36	7.09	5.21	0.13	1.67
RUDDY DUCK	0.31	0.00	0.68	0.33	0.10	0.00	0.49	0.39
OLDSQUAW	1.42	1.29	4.24	1.74	0.22	1.12	0.94	0.20
EIDERS	11.74	8.05	0.00	0.00	6.89	8.93	1.39	2.20
SCOTERS	5.55	6.30	6.50	0.96	13.89	13.11	11.16	7.21
HOODED MERGANSERS	1.36	1.31	0.58	0.00	0.16	0.44	1.14	1.67
OTHER MERGANSERS	1.47	0.98	0.00	0.00	0.93	1.32	2.52	3.33
OTHER DUCKS	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
DUCK HARVEST (RETRIEVED KILL)	76,909	86,178	77,685	176,808	72,283	90,291	31,510	30,128
PERCENT CHANGE		+12%		+128%		+25%		-4%
SEASONAL DUCK HARVEST PER ADULT HUNTER	3.87	4.08	1.79	3.75	3.62	4.48	3.20	2.87
PERCENT CHANGE		+5%		+110%		+24%		-10%

GOOSE SPECIES COMPOSITION								
CANADA GOOSE	100.00%	100.00%	99.16%	100.00%	99.15%	98.64%	100.00%	100.00%
SNOW GOOSE	0.00	0.00	0.84	0.00	0.85	0.00	0.00	0.00
BLUE GOOSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHITE-FRONTED GOOSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BRANT	0.00	0.00	0.00	0.00	0.00	1.36	0.00	0.00
OTHER GEESE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
GOOSE HARVEST (RETRIEVED KILL)	947	2,998	294,709	158,045	6,688	6,757	1,242	1,945
PERCENT CHANGE		+217%		-46%		+1%		+57%
SEASONAL GOOSE HARVEST PER ADULT HUNTER	0.11	0.15	5.82	2.86	0.32	0.33	0.14	0.15
PERCENT CHANGE		+45%		-51%		+3%		+33%
COOT HARVEST (RETRIEVED KILL)	1,412	1,520	1,322	1,533	1,120	1,810	50	855
PERCENT CHANGE		+8%		+16%		+60%		+1610%
SEASONAL COOT HARVEST PER ADULT HUNTER	0.08	0.08	0.03	0.03	0.05	0.08	0.01	0.08
PERCENT CHANGE		+1%		+10%		+62%		+1429%
TOTAL HUNTER DAYS	93,945	108,693	338,116	382,895	150,510	152,559	69,991	62,928
PERCENT CHANGE		+16%		+13%		+1%		-10%
DAYS PER ADULT HUNTER	5.12	5.63	7.94	8.38	6.93	7.07	6.52	5.89
PERCENT CHANGE		+10%		+5%		+2%		-10%
TOTAL DUCK STAMPS SOLD	17,664	18,650	39,521	43,333	22,070	21,875	10,483	10,577
PERCENT CHANGE		+6%		+9%		-1%		+1%
PERCENT SOLD TO NON-HUNTERS	1.23%	1.62%	3.85%	4.63%	6.44%	6.20%	2.61%	3.90%
TOTAL ADULT HUNTERS (POTENTIAL)	17,447	18,348	40,497	43,466	20,649	20,515	10,209	10,[illegible]4
PERCENT CHANGE		+5%		+7%		-1%		[illegible]
PERCENT ACTIVE ADULT HUNTERS	83.0%	8[illegible]%	87.3%	88.3%	83.2%	83.8%	83.4%	84.0%
PERCENT SUCCESSFUL ADULT HUNTERS	60.7%	63.7%	72.9%	67.1%	56.7%	62.4%	57.4%	57.9%
SAMPLE SIZES								
DUCK WINGS	1,056	1,047	547	410	1,094	695	280	368
GOOSE TAILS	7	24	1,708	879	116	70	4	3
QUESTIONNAIRES	661	632	697	828	491	653	245	218

BEST DOCUMENT AVAILABLE

TABLE 1-7.--PERCENTAGE SPECIES COMPOSITION OF WATERFOWL HARVESTED, TOTAL NUMBERS HARVESTED, AND ADULT HUNTER STATISTICS IN THE ATLANTIC FLYWAY DURING THE 1977 AND 1978 HUNTING SEASONS--continued.

	NEW JERSEY		NEW YORK		NORTH CAROLINA[a]		PENNSYLVANIA	
	1977	1978	1977	1978	1977	1978	1977	1978
DUCK SPECIES COMPOSITION								
MALLARD	19.60%	22.32%	29.20%	31.73%	11.31%	15.10%	44.62%	44.21%
DOMESTIC MALLARD	0.02	0.21	0.08	0.39	0.21	0.00	1.82	0.84
BLACK DUCK	21.21	29.01	12.45	15.00	4.50	4.14	7.56	6.08
BLACK X MALLARD	1.17	2.54	1.05	0.91	0.05	0.28	0.86	0.61
MOTTLED DUCK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GADWALL	2.27	2.04	1.88	1.26	2.16	3.72	0.35	1.88
AMERICAN WIGEON	2.41	3.08	3.28	4.55	7.46	8.55	1.58	1.66
GREEN-WINGED TEAL	13.51	13.53	5.25	5.80	4.84	7.44	3.97	4.27
BLUE-WINGED/CINNAMON TEAL	0.75	2.39	1.61	3.94	1.50	1.41	1.26	2.26
NORTHERN SHOVELER	0.65	0.16	0.45	0.32	0.43	0.48	0.17	0.33
PINTAIL	3.34	4.31	1.27	1.07	3.33	2.56	1.04	0.37
WOOD DUCK	8.46	6.17	11.92	10.30	23.46	40.68	21.32	26.55
REDHEAD	0.08	0.00	1.65	0.27	0.03	0.29	0.25	0.27
CANVASBACK	0.34	0.44	0.22	0.08	0.00	0.00	0.71	0.47
GREATER SCAUP	7.42	1.36	10.30	4.38	3.36	0.14	1.58	1.70
LESSER SCAUP	4.60	1.24	3.91	1.05	23.45	1.80	5.22	0.94
RING-NECKED DUCK	0.34	0.48	2.15	0.82	3.22	2.19	1.05	1.35
GOLDENEYES	0.65	0.53	2.52	3.18	0.34	0.57	0.42	0.94
BUFFLEHEAD	9.07	5.58	3.44	2.11	4.16	1.86	3.35	1.50
RUDDY DUCK	0.00	0.32	0.18	0.04	1.11	0.32	0.17	1.03
OLDSQUAW	0.17	0.30	0.31	0.36	0.06	0.00	0.50	0.23
EIDERS	0.00	0.07	0.03	0.02	0.00	0.00	0.00	0.00
SCOTERS	0.67	0.32	3.56	2.65	2.05	0.90	1.26	0.53
HOODED MERGANSERS	1.77	2.25	0.61	0.45	2.42	0.56	0.44	1.14
OTHER MERGANSERS	0.00	0.37	1.56	0.50	0.43	0.15	0.08	0.44
OTHER DUCKS	0.00	0.00	0.11	0.05	0.00	0.14	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
DUCK HARVEST (RETRIEVED KILL)	136,166	128,503	247,705	264,415	276,337	173,132	165,259	148,660
PERCENT CHANGE		-5%		+7%		-37%		-10%
SEASONAL DUCK HARVEST PER ADULT HUNTER	4.43	4.07	3.43	3.27	8.92	6.10	2.21	2.02
PERCENT CHANGE		-8%		-4%		-31%		-9%

GOOSE SPECIES COMPOSITION								
CANADA GOOSE	54.97%	45.24%	99.09%	98.38%	57.22%	45.44%	99.00%	100.00%
SNOW GOOSE	45.03	54.76	0.91	0.81	42.05	54.56	0.50	0.00
BLUE GOOSE	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00
WHITE-FRONTED GOOSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BRANT	0.00	0.00	0.00	0.81	0.73	0.00	0.00	0.00
OTHER GEESE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
GOOSE HARVEST (RETRIEVED KILL)	20,782	21,487	37,849	56,927	17,714	10,804	37,110	32,576
PERCENT CHANGE		+3%		+50%		-39%		-12%
SEASONAL GOOSE HARVEST PER ADULT HUNTER	1.00	0.81	0.53	0.71	0.54	0.34	0.56	0.48
PERCENT CHANGE		-19%		+36%		-36%		-15%
COOT HARVEST (RETRIEVED KILL)	661	2,355	1,972	4,173	13,910	12,327	5,217	7,432
PERCENT CHANGE		+256%		+112%		-11%		+42%
SEASONAL COOT HARVEST PER ADULT HUNTER	0.02	0.07	0.03	0.05	0.44	0.40	0.07	0.09
PERCENT CHANGE		+252%		+96%		-9%		+40%
TOTAL HUNTER DAYS	194,309	207,497	443,953	493,751	213,490	214,815	406,486	425,187
PERCENT CHANGE		+7%		+11%		+1%		+5%
DAYS PER ADULT HUNTER	6.24	6.69	5.74	6.02	6.98	7.23	5.37	5.56
PERCENT CHANGE		+7%		+5%		+4%		+4%
TOTAL DUCK STAMPS SOLD	31,550	31,597	79,293	83,388	29,545	29,050	74,213	76,154
PERCENT CHANGE		0%		+5%		-2%		+3%
PERCENT SOLD TO NON-HUNTERS	6.21%	6.69%	7.26%	6.47%	2.03%	3.25%	2.96%	4.58%
TOTAL ADULT HUNTERS (POTENTIAL)	29,591	29,483	73,536	77,993	29,090	28,253	72,016	72,666
PERCENT CHANGE		0%		+6%		-3%		+1%
PERCENT ACTIVE ADULT HUNTERS	86.2%	83.7%	80.7%	80.4%	88.0%	88.3%	86.5%	85.8%
PERCENT SUCCESSFUL ADULT HUNTERS	61.7%	65.1%	56.1%	57.5%	73.4%	71.2%	57.3%	53.8%
SAMPLE SIZES								
DUCK WINGS	1,194	853	1,755	2,067	1,595	777	1,005	881
GOOSE TAILS	151	180	223	370	120	90	205	138
QUESTIONNAIRES	484	594	1,242	1,943	870	920	1,078	1,287

TABLE C-7--PERCENTAGE SPECIES COMPOSITION OF WATERFOWL HARVESTED, TOTAL NUMBERS HARVESTED, AND ADULT HUNTER STATISTICS IN THE ATLANTIC FLYWAY DURING THE 1977 AND 1978 HUNTING SEASONS--continued.

	RHODE ISLAND		SOUTH CAROLINA		VERMONT		VIRGINIA[a]	
	1977	1978	1977	1978	1977	1978	1977	1978
DUCK SPECIES COMPOSITION								
MALLARD	7.40%	17.08%	21.08%	22.55%	24.28%	28.37%	24.24%	30.13%
DOMESTIC MALLARD	0.41	1.13	0.18	0.12	0.00	0.81	0.33	0.08
BLACK DUCK	23.76	34.59	3.23	3.97	26.00	18.62	8.32	14.18
BLACK X MALLARD	1.36	3.82	0.26	0.39	0.70	1.10	0.28	1.00
MOTTLED DUCK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GADWALL	0.82	0.80	4.27	3.45	0.00	0.51	5.20	5.40
AMERICAN WIGEON	1.29	1.17	5.62	4.42	1.12	0.44	6.65	6.33
GREEN-WINGED TEAL	7.79	1.55	8.79	6.15	12.90	12.91	5.18	5.18
BLUE-WINGED/CINNAMON TEAL	0.41	1.51	1.18	3.14	2.24	5.27	1.17	3.93
NORTHERN SHOVELER	0.00	0.00	0.73	1.49	0.00	0.00	0.61	0.17
PINTAIL	0.21	0.76	1.44	1.89	1.60	0.51	2.60	1.51
WOOD DUCK	4.52	6.04	31.43	43.46	20.22	24.63	20.63	17.10
REDHEAD	0.00	0.76	0.41	0.19	0.00	0.00	0.00	0.08
CANVASBACK	0.41	1.37	1.32	0.19	0.00	0.00	0.07	0.00
GREATER SCAUP	31.37	12.32	1.02	0.38	0.28	0.58	0.80	0.42
LESSER SCAUP	4.73	2.40	9.48	0.62	0.00	0.74	10.42	0.33
RING-NECKED DUCK	0.00	0.38	6.29	5.64	4.43	0.22	4.23	5.54
GOLDENEYES	3.06	3.02	0.26	0.30	0.45	0.58	1.94	1.32
BUFFLEHEAD	2.26	4.65	1.73	0.41	0.00	1.39	3.76	3.72
RUDDY DUCK	0.00	0.00	0.38	0.08	0.22	0.00	0.21	0.68
OLDSQUAW	0.00	0.00	0.00	0.00	0.00	0.00	0.73	0.00
EIDERS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCOTERS	7.13	3.09	0.00	0.00	2.44	0.66	0.41	0.08
HOODED MERGANSERS	1.37	0.84	0.51	1.15	2.89	2.39	1.71	2.34
OTHER MERGANSERS	1.70	2.73	0.00	0.00	0.00	0.27	0.50	0.08
OTHER DUCKS	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
DUCK HARVEST (RETRIEVED KILL)	26,879	19,107	173,635	186,871	32,878	36,571	129,403	129,574
PERCENT CHANGE		-29%		+8%		+11%		0%
SEASONAL DUCK HARVEST PER ADULT HUNTER	7.73	5.03	7.06	7.34	3.83	4.17	5.55	5.86
PERCENT CHANGE		-35%		+4%		+9%		-2%

GOOSE SPECIES COMPOSITION								
CANADA GOOSE	100.00%	100.00%	0.00%	100.00%	100.00%	97.26%	83.60%	86.60%
SNOW GOOSE	0.00	0.00	0.00	0.00	0.00	2.74	12.03	13.40
BLUE GOOSE	0.00	0.00	0.00	0.00	0.00	0.00	1.09	0.00
WHITE-FRONTED GOOSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BRANT	0.00	0.00	0.00	0.00	0.00	0.00	3.28	0.00
OTHER GEESE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.00	100.00	0.00	100.00	100.00	100.00	100.00	100.00
GOOSE HARVEST (RETRIEVED KILL)	1,422	2,076	0	305	3,051	3,907	13,515	7,048
PERCENT CHANGE		+46%		99930%		+28%		-48%
SEASONAL GOOSE HARVEST PER ADULT HUNTER	0.57	0.52	0.20	0.10	0.33	0.48	1.62	0.85
PERCENT CHANGE		-9%		-50%		+46%		-48%
COOT HARVEST (RETRIEVED KILL)	84	519	7,576	9,462	171	783	1,963	4,011
PERCENT CHANGE		+518%		+25%		+356%		+104%
SEASONAL COOT HARVEST PER ADULT HUNTER	0.03	0.15	0.31	0.38	0.02	0.09	0.09	0.17
PERCENT CHANGE		+481%		+22%		+335%		+94%
TOTAL HUNTER DAYS	26,919	29,945	172,735	180,212	45,872	51,385	131,550	146,811
PERCENT CHANGE		+11%		+4%		+12%		+12%
DAYS PER ADULT HUNTER	8.55	9.01	7.33	7.48	5.55	5.85	5.93	6.29
PERCENT CHANGE		+5%		+2%		+5%		+6%
TOTAL DUCK STAMPS SOLD	3,112	3,338	22,637	23,665	8,155	8,600	21,460	22,331
PERCENT CHANGE		+7%		+5%		+5%		+4%
PERCENT SOLD TO NON-HUNTERS	3.85%	5.28%	1.06%	3.16%	3.66%	2.55%	6.55%	5.45%
TOTAL ADULT HUNTERS (POTENTIAL)	2,992	3,162	22,397	22,921	7,857	8,346	21,109	22,185
PERCENT CHANGE		+6%		+2%		+6%		+5%
PERCENT ACTIVE ADULT HUNTERS	85.0%	83.9%	89.9%	88.9%	83.8%	88.3%	83.6%	84.6%
PERCENT SUCCESSFUL ADULT HUNTERS	58.1%	56.8%	72.9%	71.1%	59.6%	65.3%	68.1%	66.5%
SAMPLE SIZES								
DUCK WINGS	439	243	1,361	1,264	381	364	1,334	1,179
GOOSE TAILS	57	40	0	0	21	37	91	76
QUESTIONNAIRES	204	224	719	679	377	310	682	913

TABLE C-7--PERCENTAGE SPECIES COMPOSITION OF WATERFOWL HARVESTED, TOTAL NUMBERS HARVESTED, AND ADULT HUNTER STATISTICS IN THE ATLANTIC FLYWAY DURING THE 1977 AND 1978 HUNTING SEASONS--continued.

	WEST VIRGINIA		ATLANTIC FLYWAY TOTAL	
	1977	1978	1977	1978
DUCK SPECIES COMPOSITION				
MALLARD	28.98%	37.69%	20.62%	22.73%
DOMESTIC MALLARD	2.10	1.23	0.44	0.39
BLACK DUCK	9.67	16.81	10.36	13.48
BLACK X MALLARD	0.00	0.72	0.58	0.80
MOTTLED DUCK	0.00	0.00	0.62	0.94
GADWALL	0.36	1.59	1.78	2.07
AMERICAN WIGEON	2.12	0.87	3.94	4.02
GREEN-WINGED TEAL	2.42	0.80	6.37	8.10
BLUE-WINGED/CINNAMON TEAL	1.74	5.72	2.55	4.58
NORTHERN SHOVELER	0.34	0.00	0.54	0.75
PINTAIL	0.00	0.36	2.69	1.84
WOOD DUCK	46.66	29.65	18.22	20.94
REDHEAD	0.00	0.80	0.45	0.44
CANVASBACK	0.00	0.00	0.37	0.28
GREATER SCAUP	0.34	0.36	3.80	1.47
LESSER SCAUP	1.04	0.36	10.57	2.04
RING-NECKED DUCK	0.00	0.00	5.30	6.49
GOLDENEYES	2.51	1.52	1.07	1.23
BUFFLEHEAD	0.70	1.16	3.63	2.60
RUDDY DUCK	0.34	0.00	0.32	0.36
OLDSQUAW	0.00	0.00	0.44	0.36
EIDERS	0.00	0.00	0.77	0.81
SCOTERS	0.34	0.00	2.67	1.80
HOODED MERGANSERS	0.34	0.36	1.31	1.08
OTHER MERGANSERS	0.00	0.00	0.54	0.41
OTHER DUCKS	0.00	0.00	0.05	0.02
TOTAL	100.00	100.00	100.00	100.00
DUCK HARVEST (RETRIEVED KILL)	5,459	9,032	1,881,901	1,945,890
PERCENT CHANGE		+65%		+3%
SEASONAL DUCK HARVEST PER ADULT HUNTER	2.19	3.89	4.36	4.41
PERCENT CHANGE		+78%		+1%

GOOSE SPECIES COMPOSITION				
CANADA GOOSE	100.00%	100.00%	95.25%	94.07%
SNOW GOOSE	0.00	0.00	4.52	5.77
BLUE GOOSE	0.00	0.00	0.07	0.00
WHITE-FRONTED GOOSE	0.00	0.00	0.03	0.00
BRANT	0.00	0.00	0.12	0.16
OTHER GEESE	0.00	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00
GOOSE HARVEST (RETRIEVED KILL)	363	115	485,131	347,631
PERCENT CHANGE		-67%		-29%
SEASONAL GOOSE HARVEST PER ADULT HUNTER	0.36	0.09	1.16	0.79
PERCENT CHANGE		-74%		-32%
COOT HARVEST (RETRIEVED KILL)	157	464	53,591	77,995
PERCENT CHANGE		+196%		+46%
SEASONAL COOT HARVEST PER ADULT HUNTER	0.06	0.20	0.12	0.17
PERCENT CHANGE		+209%		+41%
TOTAL HUNTER DAYS	9,878	10,839	2,744,693	2,958,200
PERCENT CHANGE		+10%		+8%
DAYS PER ADULT HUNTER	4.14	4.76	6.29	6.55
PERCENT CHANGE		+15%		+4%
TOTAL DUCK STAMPS SOLD	2,358	2,354	434,557	451,319
PERCENT CHANGE		0%		+4%
PERCENT SOLD TO NON-HUNTERS	3.89%	8.06%	4.46%	4.86%
TOTAL ADULT HUNTERS (POTENTIAL)	2,266	2,164	415,159	429,401
PERCENT CHANGE		-5%		+3%
PERCENT ACTIVE ADULT HUNTERS	81.4%	86.2%	84.7%	84.9%
PERCENT SUCCESSFUL ADULT HUNTERS	58.2%	65.3%	62.9%	62.7%
SAMPLE SIZES				
DUCK WINGS	276	246	15,922	14,137
GOOSE TAILS	10	4	3,231	2,270
QUESTIONNAIRES	174	208	10,570	12,123

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[a] Washington, D. C. hunter activity allocated to Maryland, North Carolina, and Virginia.

TABLE C-8--PERCENTAGE SPECIES COMPOSITION OF WATERFOWL HARVESTED, TOTAL NUMBERS HARVESTED, AND ADULT HUNTER STATISTICS IN THE MISSISSIPPI FLYWAY DURING THE 1977 AND 1978 HUNTING SEASONS.

	ALABAMA		ARKANSAS		ILLINOIS		INDIANA	
	1977	1978	1977	1978	1977	1978	1977	1978
DUCK SPECIES COMPOSITION								
MALLARD	25.56%	25.27%	68.33%	68.73%	50.63%	47.05%	52.32%	39.14%
DOMESTIC MALLARD	0.06	0.23	0.00	0.08	0.14	0.18	0.12	0.20
BLACK DUCK	3.84	2.96	0.68	0.59	1.28	1.30	3.49	5.61
BLACK X MALLARD	0.34	0.05	0.05	0.04	0.25	0.12	0.30	0.20
MOTTLED DUCK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GADWALL	7.32	8.08	7.40	8.41	5.99	4.38	1.45	5.39
AMERICAN WIGEON	3.35	4.22	2.62	1.62	4.01	4.06	2.74	4.12
GREEN-WINGED TEAL	7.45	7.25	5.62	5.05	7.07	8.28	6.36	9.09
BLUE-WINGED/CINNAMON TEAL	2.80	3.66	0.81	1.21	4.13	5.28	5.19	6.70
NORTHERN SHOVELER	1.43	0.74	0.97	0.71	0.81	0.66	0.37	0.30
PINTAIL	1.86	3.89	1.34	0.74	1.84	2.64	1.28	1.42
WOOD DUCK	25.40	35.54	5.43	9.41	10.24	13.61	12.62	17.19
REDHEAD	0.26	0.18	0.08	0.08	0.56	0.74	0.50	0.78
CANVASBACK	0.43	0.39	0.29	0.15	0.27	0.39	0.42	0.61
GREATER SCAUP	1.41	0.25	0.00	0.00	0.41	0.82	0.15	0.45
LESSER SCAUP	8.85	2.78	3.37	0.77	4.89	4.47	3.40	1.35
RING-NECKED DUCK	4.95	2.84	2.27	1.62	4.89	3.57	2.06	4.65
GOLDENEYES	1.07	0.47	0.00	0.00	0.73	0.82	3.20	1.11
BUFFLEHEAD	1.65	0.34	0.32	0.04	0.70	0.58	2.10	0.73
RUDDY DUCK	0.48	0.18	0.00	0.33	0.07	0.36	0.27	0.30
OLDSQUAW	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00
EIDERS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCOTERS	0.00	0.00	0.02	0.00	0.24	0.05	0.10	0.17
HOODED MERGANSERS	0.79	0.68	0.36	0.31	0.59	0.58	0.56	0.41
OTHER MERGANSERS	0.15	0.00	0.00	0.04	0.26	0.00	0.48	0.07
OTHER DUCKS	0.17	0.00	0.00	0.07	0.00	0.07	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
DUCK HARVEST (RETRIEVED KILL)	135,809	118,379	852,776	698,338	347,082	441,236	72,383	72,004
PERCENT CHANGE		-15%		-18%		+27%		-1%
SEASONAL DUCK HARVEST PER ADULT HUNTER	8.35	7.16	13.23	10.30	5.63	6.45	5.74	5.54
PERCENT CHANGE		-14%		-22%		+14%		-3%

GOOSE SPECIES COMPOSITION								
CANADA GOOSE	66.67%	100.00%	35.37%	29.31%	99.45%	98.57%	100.00%	100.00%
SNOW GOOSE	11.11	0.00	39.31	26.72	0.55	0.48	0.00	0.00
BLUE GOOSE	22.22	0.00	25.32	36.64	0.00	0.95	0.00	0.00
WHITE-FRONTED GOOSE	0.00	0.00	0.00	7.33	0.00	0.00	0.00	0.00
BRANT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER GEESE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
GOOSE HARVEST (RETRIEVED KILL)	1,108	3,413	5,843	13,935	76,986	120,423	3,653	2,305
PERCENT CHANGE		+208%		+138%		+56%		-38%
SEASONAL GOOSE HARVEST PER ADULT HUNTER	0.25	0.24	0.17	0.22	1.18	1.68	0.45	0.43
PERCENT CHANGE		-3%		+24%		+42%		-6%
COOT HARVEST (RETRIEVED KILL)	6,177	14,202	6,368	10,643	5,553	9,584	1,667	4,141
PERCENT CHANGE		+130%		+67%		+73%		+148%
SEASONAL COOT HARVEST PER ADULT HUNTER	0.35	0.84	0.11	0.18	0.08	0.14	0.11	0.26
PERCENT CHANGE		+1[illegible]7%		+66%		+69%		+146%
TOTAL HUNTER DAYS	129,001	124,568	552,543	477,483	630,538	681,058	107,323	123,836
PERCENT CHANGE		-3%		-14%		+8%		+15%
DAYS PER ADULT HUNTER	7.54	7.49	9.48	8.12	9.26	5.80	6.53	7.95
PERCENT CHANGE		-1%		-14%		+6%		+15%
TOTAL DUCK STAMPS SOLD	16,437	16,072	54,519	56,892	66,065	67,805	15,215	15,364
PERCENT CHANGE		-2%		+4%		+3%		+1%
PERCENT SOLD TO NON-HUNTERS	2.70%	3.29%	0.76%	3.38%	3.67%	4.18%	4.88%	5.29%
TOTAL ADULT HUNTERS (POTENTIAL)	15,993	15,543	54,502	54,969	63,640	64,971	14,473	14,551
PERCENT CHANGE		-3%		+1%		+2%		+1%
PERCENT ACTIVE ADULT HUNTERS	83.7%	86.9%	85.9%	85.7%	86.6%	88.0%	85.2%	87.2%
PERCENT SUCCESSFUL ADULT HUNTERS	72.6%	69.4%	74.9%	73.1%	70.0%	72.4%	68.4%	69.8%
SAMPLE SIZES								
DUCK WINGS	1,376	1,080	1,605	1,942	1,375	1,547	1,215	1,096
GOOSE TAILS	9	16	9	13	204	218	31	14
QUESTIONNAIRES	783	773	660	906	860	1,156	372	643

BEST DOCUMENT AVAILABLE

TABLE C-8-- PERCENTAGE SPECIES COMPOSITION OF WATERFOWL HARVESTED, TOTAL NUMBERS HARVESTED, AND ADULT HUNTER STATISTICS IN THE MISSISSIPPI FLYWAY DURING THE 1977 AND 1978 HUNTING SEASONS--continued.

	IOWA		KENTUCKY		LOUISIANA		MICHIGAN	
	1977	1978	1977	1978	1977	1978	1977	1978
DUCK SPECIES COMPOSITION								
MALLARD	49.54%	35.75%	61.61%	53.74%	16.60%	17.91%	41.86%	47.92%
DOMESTIC MALLARD	0.17	0.05	0.55	0.96	0.00	0.00	0.36	0.16
BLACK DUCK	0.13	0.07	10.67	10.92	0.11	0.25	5.44	5.72
BLACK X MALLARD	0.00	0.11	0.63	0.59	0.00	0.02	0.25	0.44
MOTTLED DUCK	0.00	0.00	0.00	0.00	2.36	2.58	0.00	0.00
GADWALL	3.85	4.95	2.45	7.55	10.01	14.05	0.86	2.86
AMERICAN WIGEON	3.97	3.69	2.09	1.29	4.97	6.78	2.38	4.99
GREEN-WINGED TEAL	13.83	11.88	1.91	0.75	19.04	17.81	10.01	5.81
BLUE-WINGED/CINNAMON TEAL	6.07	11.69	0.75	1.05	13.64	13.27	2.02	3.86
NORTHERN SHOVELER	1.44	1.70	0.21	0.00	4.30	5.75	0.11	0.07
PINTAIL	2.73	2.62	2.31	0.93	7.69	6.66	2.60	1.58
WOOD DUCK	13.55	20.93	4.22	15.12	6.73	7.69	9.46	8.68
REDHEAD	0.45	0.69	0.00	1.07	0.14	0.23	0.63	1.49
CANVASBACK	0.33	0.19	1.18	0.59	0.39	0.31	0.65	0.18
GREATER SCAUP	0.09	0.15	0.57	0.86	0.12	0.16	3.60	1.51
LESSER SCAUP	1.51	1.61	3.36	0.16	9.69	2.76	6.33	3.31
RING-NECKED DUCK	1.26	2.09	4.90	0.16	2.49	2.67	3.54	3.98
GOLDENEYES	0.38	0.29	0.85	2.16	0.18	0.10	1.49	1.38
BUFFLEHEAD	0.26	0.52	0.47	0.00	0.10	0.10	3.10	3.03
RUDDY DUCK	0.10	0.00	0.00	0.00	0.31	0.43	0.34	0.51
OLDSQUAW	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.04
EIDERS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
SCOTERS	0.00	0.05	0.00	0.00	0.02	0.00	2.32	0.00
HOODED MERGANSERS	0.34	0.92	1.28	1.67	0.78	0.40	1.64	2.25
OTHER MERGANSERS	0.00	0.00	0.00	0.43	0.27	0.07	0.84	0.14
OTHER DUCKS	0.00	0.00	0.00	0.00	0.05	0.00	0.06	0.05
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
DUCK HARVEST (RETRIEVED KILL)	279,965	351,358	74,784	64,287	1,937,748	2,010,363	255,687	290,044
PERCENT CHANGE		+26%		-14%		+4%		+13%
SEASONAL DUCK HARVEST PER ADULT HUNTER	4.43	5.84	4.61	3.85	15.28	15.34	3.30	4.29
PERCENT CHANGE		+32%		-16%		0%		+30%

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GOOSE SPECIES COMPOSITION								
CANADA GOOSE	20.69%	32.68%	98.51%	100.00%	1.83%	0.00%	96.73%	100.00%
SNOW GOOSE	36.39	29.51	0.00	0.00	18.31	25.30	0.00	0.00
BLUE GOOSE	40.41	36.01	1.49	0.00	58.87	47.19	3.27	0.00
WHITE-FRONTED GOOSE	2.52	1.81	0.00	0.00	20.99	27.51	0.00	0.00
BRANT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER GEESE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
GOOSE HARVEST (RETRIEVED KILL)	37,934	36,488	19,131	23,417	80,550	115,209	32,837	23,305
PERCENT CHANGE		-4%		+22%		+42%		-29%
SEASONAL GOOSE HARVEST PER ADULT HUNTER	0.52	0.47	0.91	1.52	0.66	0.92	0.42	0.36
PERCENT CHANGE		-10%		+67%		+39%		-16%
COOT HARVEST (RETRIEVED KILL)	6,586	7,509	533	3,162	169,172	228,674	5,640	10,662
PERCENT CHANGE		+14%		+493%		+35%		+89%
SEASONAL COOT HARVEST PER ADULT HUNTER	0.11	0.13	0.03	0.18	1.28	1.70	0.07	0.16
PERCENT CHANGE		+16%		+441%		+32%		+111%
TOTAL HUNTER DAYS	435,846	454,666	113,454	117,977	1,068,246	1,073,380	443,131	407,546
PERCENT CHANGE		+4%		+4%		0%		-8%
DAYS PER ADULT HUNTER	7.33	7.75	7.30	6.99	8.26	8.12	5.89	6.09
PERCENT CHANGE		+6%		-4%		-2%		+3%
TOTAL DUCK STAMPS SOLD	57,143	56,259	14,905	16,036	122,349	125,301	72,096	65,055
PERCENT CHANGE		-2%		+8%		+2%		-10%
PERCENT SOLD TO NON-HUNTERS	2.79%	2.50%	2.49%	1.65%	1.22%	1.42%	2.43%	3.83%
TOTAL ADULT HUNTERS (POTENTIAL)	55,549	54,853	14,534	15,770	120,856	123,522	70,344	62,563
PERCENT CHANGE		-1%		+9%		+2%		-11%
PERCENT ACTIVE ADULT HUNTERS	83.2%	87.1%	85.0%	82.3%	85.8%	85.1%	84.4%	84.5%
PERCENT SUCCESSFUL ADULT HUNTERS	64.6%	72.7%	63.8%	61.4%	78.0%	77.3%	58.4%	65.9%
SAMPLE SIZES								
DUCK WINGS	1,447	1,552	529	294	4,279	3,866	1,565	1,653
GOOSE TAILS	197	170	92	63	58	76	102	97
QUESTIONNAIRES	682	939	466	570	1,787	1,629	724	1,044

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TABLE C-8--PERCENTAGE SPECIES COMPOSITION OF WATERFOWL HARVESTED, TOTAL NUMBERS HARVESTED, AND ADULT HUNTER STATISTICS IN THE MISSISSIPPI FLYWAY DURING THE 1977 AND 1978 HUNTING SEASONS --continued.

	MINNESOTA		MISSISSIPPI		MISSOURI		OHIO	
	1977	1978	1977	1978	1977	1978	1977	1978
DUCK SPECIES COMPOSITION								
MALLARD	29.04%	30.04%	56.48%	50.98%	53.24%	47.55%	41.05%	36.15%
DOMESTIC MALLARD	0.13	0.09	0.05	0.15	0.00	0.00	0.56	0.12
BLACK DUCK	0.37	0.10	2.11	1.98	0.17	0.11	6.03	5.72
BLACK X MALLARD	0.00	0.02	0.08	0.08	0.00	0.00	0.45	0.50
MOTTLED DUCK	0.00	0.00	0.17	0.16	0.00	0.00	0.00	0.00
GADWALL	2.88	2.77	6.11	5.11	7.30	7.09	1.13	1.57
AMERICAN WIGEON	6.77	5.61	2.58	4.36	5.94	3.20	3.52	2.90
GREEN-WINGED TEAL	10.45	6.86	5.67	7.87	9.41	8.32	5.38	6.76
BLUE-WINGED/CINNAMON TEAL	11.93	11.25	1.24	1.62	4.72	7.62	5.60	7.15
NORTHERN SHOVELER	1.28	2.67	0.87	1.57	1.63	1.21	0.55	0.99
PINTAIL	1.19	1.85	0.45	0.24	1.44	3.80	1.31	1.06
WOOD DUCK	12.87	12.23	12.74	19.09	7.86	8.03	22.53	23.12
REDHEAD	1.63	3.46	0.14	0.00	0.38	0.52	0.94	2.66
CANVASBACK	0.79	0.53	0.28	0.17	0.16	0.23	0.82	0.47
GREATER SCAUP	0.20	0.19	0.17	0.16	0.08	0.15	0.45	0.71
LESSER SCAUP	5.20	4.77	6.18	1.20	4.33	4.96	3.65	2.06
RING-NECKED DUCK	12.91	13.57	3.06	3.82	2.51	3.47	1.32	3.15
GOLDENEYES	0.32	0.85	0.16	0.00	0.19	0.51	0.27	1.06
BUFFLEHEAD	1.46	2.04	0.08	0.26	0.17	0.58	1.39	1.83
RUDDY DUCK	0.03	0.51	0.12	0.15	0.00	1.50	0.85	0.95
OLDSQUAW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EIDERS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCOTERS	0.09	0.03	0.00	0.00	0.11	0.00	0.34	0.12
HOODED MERGANSERS	0.44	0.50	1.18	0.86	0.21	0.57	0.88	0.75
OTHER MERGANSERS	0.03	0.04	0.04	0.18	0.16	0.15	0.85	0.20
OTHER DUCKS	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
DUCK HARVEST (RETRIEVED KILL)	664,871	1,012,331	330,163	227,836	265,486	253,854	106,653	102,153
PERCENT CHANGE		+52%		-31%		-6%		-4%
SEASONAL DUCK HARVEST PER ADULT HUNTER	4.41	6.89	9.77	7.65	4.50	4.28	2.98	3.03
PERCENT CHANGE		+56%		-22%		-5%		+2%

GOOSE SPECIES COMPOSITION								
CANADA GOOSE	81.66%	94.08%	85.72%	100.00%	76.91%	85.83%	98.51%	100.00%
SNOW GOOSE	4.85	0.66	7.14	0.00	12.70	7.27	1.09	0.00
BLUE GOOSE	11.87	5.26	7.14	0.00	10.39	6.90	0.00	0.00
WHITE-FRONTED GOOSE	1.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BRANT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER GEESE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
GOOSE HARVEST (RETRIEVED KILL)	44,195	57,009	3,273	3,902	84,552	79,542	12,652	10,716
PERCENT CHANGE		+29%		+19%		-6%		-16%
SEASONAL GOOSE HARVEST PER ADULT HUNTER	0.38	0.46	0.11	0.14	1.23	1.14	0.36	0.32
PERCENT CHANGE		+22%		+33%		-7%		-11%
COOT HARVEST (RETRIEVED KILL)	32,642	63,556	3,561	5,656	3,642	4,818	6,094	6,666
PERCENT CHANGE		+95%		+59%		+32%		+9%
SEASONAL COOT HARVEST PER ADULT HUNTER	0.20	0.38	0.11	0.19	0.05	0.07	0.15	0.17
PERCENT CHANGE		+90%		+77%		+35%		+8%
TOTAL HUNTER DAYS	1,028,405	1,160,152	224,959	199,963	460,465	443,872	252,906	246,445
PERCENT CHANGE		+13%		-11%		-4%		-3%
DAYS PER ADULT HUNTER	6.46	7.11	7.03	6.96	7.08	6.55	6.47	6.27
PERCENT CHANGE		+10%		-1%		-1%		-3%
TOTAL DUCK STAMPS SOLD	150,605	155,387	30,282	27,164	61,325	60,718	38,412	39,483
PERCENT CHANGE		+3%		-10%		-1%		+3%
PERCENT SOLD TO NON-HUNTERS	1.36%	1.85%	1.28%	1.20%	0.88%	2.31%	4.89%	6.99%
TOTAL ADULT HUNTERS (POTENTIAL)	148,754	152,512	29,694	26,838	60,785	59,315	36,534	36,723
PERCENT CHANGE		+3%		-10%		-2%		+1%
PERCENT ACTIVE ADULT HUNTERS	91.0%	90.8%	85.3%	84.9%	87.4%	87.0%	87.7%	85.3%
PERCENT SUCCESSFUL ADULT HUNTERS	72.1%	80.5%	74.9%	73.3%	67.4%	68.6%	60.6%	58.2%
SAMPLE SIZES								
DUCK WINGS	2,967	3,026	1,508	1,069	1,119	1,199	1,363	850
GOOSE TAILS	185	152	14	5	269	235	91	86
QUESTIONNAIRES	1,671	1,970	659	887	963	1,138	626	760

TABLE C-8-- PERCENTAGE SPECIES COMPOSITION OF WATERFOWL HARVESTED, TOTAL NUMBERS HARVESTED, AND ADULT HUNTER STATISTICS IN THE MISSISSIPPI FLYWAY DURING THE 1977 AND 1978 HUNTING SEASONS--continued.

	TENNESSEE		WISCONSIN		MISSISSIPPI FLYWAY TOTAL	
	1977	1978	1977	1978	1977	1978
DUCK SPECIES COMPOSITION						
MALLARD	58.87%	57.25%	36.23%	34.14%	38.11%	35.60%
DOMESTIC MALLARD	0.12	0.30	0.16	0.17	0.09	0.09
BLACK DUCK	9.11	5.84	1.57	1.43	1.33	1.18
BLACK X MALLARD	0.00	0.04	0.06	0.24	0.08	0.09
MOTTLED DUCK	0.00	0.00	0.00	0.00	0.78	0.82
GADWALL	4.01	7.79	1.47	3.13	6.33	7.78
AMERICAN WIGEON	3.05	3.60	5.12	9.64	4.37	5.32
GREEN-WINGED TEAL	4.20	1.03	9.64	7.63	11.66	10.45
BLUE-WINGED/CINNAMON TEAL	3.29	3.75	10.22	13.59	7.93	9.22
NORTHERN SHOVELER	0.48	0.07	0.66	1.19	2.04	2.71
PINTAIL	1.68	2.11	2.09	1.23	3.59	3.32
WOOD DUCK	6.12	9.90	15.47	13.27	9.72	11.70
REDHEAD	0.13	0.28	1.16	1.17	0.47	1.00
CANVASBACK	0.00	0.34	0.39	0.29	0.42	0.32
GREATER SCAUP	0.78	0.48	1.49	0.66	0.45	0.33
LESSER SCAUP	2.17	0.67	4.06	1.92	6.12	2.80
RING-NECKED DUCK	4.85	1.67	6.87	6.61	4.26	4.78
GOLDENEYES	0.21	1.31	0.43	0.75	0.36	0.48
BUFFLEHEAD	0.00	1.50	2.23	1.36	0.72	0.80
RUDDY DUCK	0.00	0.04	0.17	0.10	0.18	0.40
OLDSQUAW	0.23	0.00	0.00	0.00	0.01	0.00
EIDERS	0.00	0.00	0.00	0.00	0.00	0.00
SCOTERS	0.00	0.00	0.11	0.00	0.15	0.02
HOODED MERGANSERS	0.43	1.51	0.40	1.04	0.66	0.66
OTHER MERGANSERS	0.23	0.00	0.00	0.46	0.18	0.10
OTHER DUCKS	0.03	0.53	0.00	0.00	0.02	0.03
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00
DUCK HARVEST (RETRIEVED KILL)	136,018	155,551	488,500	541,770	5,955,985	6,339,984
PERCENT CHANGE		+15%		+11%		+6%
SEASONAL DUCK HARVEST PER ADULT HUNTER	8.73	8.65	3.24	4.23	6.70	7.36
PERCENT CHANGE		0%		+31%		+10%

GOOSE SPECIES COMPOSITION						
CANADA GOOSE	100.00%	96.30%	98.12%	99.22%	71.09%	71.80%
SNOW GOOSE	0.00	0.00	0.00	0.39	8.89	8.55
BLUE GOOSE	0.00	3.70	1.88	0.39	16.31	14.03
WHITE-FRONTED GOOSE	0.00	0.00	0.00	0.00	3.71	5.63
BRANT	0.00	0.00	0.00	0.00	0.00	0.00
OTHER GEESE	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00
GOOSE HARVEST (RETRIEVED KILL)	8,218	17,155	91,644	86,355	503,056	553,178
PERCENT CHANGE		+109%		-6%		+18%
SEASONAL GOOSE HARVEST PER ADULT HUNTER	0.37	0.77	0.61	0.72	0.57	0.70
PERCENT CHANGE		+107%		+19%		+21%
COOT HARVEST (RETRIEVED KILL)	5,779	4,888	31,032	32,780	284,446	406,541
PERCENT CHANGE		-15%		+6%		+43%
SEASONAL COOT HARVEST PER ADULT HUNTER	0.18	0.16	0.21	0.26	0.31	0.45
PERCENT CHANGE		-14%		+26%		+47%
TOTAL HUNTER DAYS	246,255	302,998	984,534	928,645	6,677,686	6,742,589
PERCENT CHANGE		+23%		-6%		+1%
DAYS PER ADULT HUNTER	7.96	9.90	6.62	7.49	7.31	7.62
PERCENT CHANGE		+24%		+13%		+4%
TOTAL DUCK STAMPS SOLD	29,575	29,213	142,536	118,107	872,064	848,856
PERCENT CHANGE		-1%		-17%		-3%
PERCENT SOLD TO NON-HUNTERS	2.23%	2.06%	2.42%	1.84%	2.09%	2.61%
TOTAL ADULT HUNTERS (POTENTIAL)	28,915	28,611	139,087	115,934	853,860	826,675
PERCENT CHANGE		-1%		-17%		-3%
PERCENT ACTIVE ADULT HUNTERS	88.7%	87.5%	87.9%	89.7%	87.0%	87.4%
PERCENT SUCCESSFUL ADULT HUNTERS	72.3%	73.4%	69.6%	73.1%	70.0%	73.1%
SAMPLE SIZES						
DUCK WINGS	536	778	1,912	2,317	22,796	22,269
GOOSE TAILS	14	27	317	254	1,592	1,426
QUESTIONNAIRES	681	500	1,216	1,263	12,149	14,178

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TABLE C-9-- PERCENTAGE SPECIES COMPOSITION OF WATERFOWL HARVESTED, TOTAL NUMBERS HARVESTED, AND ADULT HUNTER STATISTICS IN THE CENTRAL FLYWAY DURING THE 1977 AND 1978 HUNTING SEASONS.

	COLORADO[a]		KANSAS		MONTANA[a]		NEBRASKA	
	1977	1978	1977	1978	1977	1978	1977	1978
DUCK SPECIES COMPOSITION								
MALLARD	48.16%	58.06%	40.57%	48.38%	73.38%	69.20%	56.18%	59.62%
DOMESTIC MALLARD	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.19
BLACK DUCK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BLACK X MALLARD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOTTLED DUCK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GADWALL	4.98	6.18	7.48	8.06	5.82	6.36	5.12	5.55
AMERICAN WIGEON	9.28	7.82	6.53	4.79	7.94	5.83	7.10	5.24
GREEN-WINGED TEAL	15.82	9.75	19.06	15.50	5.11	4.01	18.72	13.38
BLUE-WINGED/CINNAMON TEAL	7.64	10.30	7.62	8.25	0.77	1.60	1.40	3.01
NORTHERN SHOVELER	2.62	2.56	2.11	1.38	1.32	2.28	1.54	2.23
PINTAIL	3.18	1.43	4.46	2.44	2.20	5.41	3.54	1.97
WOOD DUCK	0.00	0.26	3.70	1.48	0.53	0.34	2.02	2.55
REDHEAD	0.94	0.41	1.24	2.10	0.00	0.70	0.76	1.78
CANVASBACK	0.34	0.06	0.24	0.10	0.65	0.55	0.08	0.11
GREATER SCAUP	0.23	0.00	0.13	0.00	0.00	0.00	0.00	0.08
LESSER SCAUP	1.08	0.89	1.72	2.45	0.19	1.77	0.91	2.10
RING-NECKED DUCK	0.21	0.23	3.70	2.07	0.58	0.41	1.05	0.77
GOLDENEYES	0.44	1.17	0.29	0.48	0.37	1.50	0.19	0.42
BUFFLEHEAD	0.32	0.63	0.44	2.41	0.39	0.00	0.69	0.19
RUDDY DUCK	0.08	0.00	0.08	0.03	0.00	0.00	0.30	0.00
OLDSQUAW	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EIDERS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCOTERS	0.11	0.00	0.14	0.00	0.00	0.00	0.00	0.00
HOODED MERGANSERS	0.00	0.00	0.05	0.00	0.19	0.00	0.00	0.16
OTHER MERGANSERS	0.46	0.23	0.04	0.00	0.56	0.00	0.00	0.58
OTHER DUCKS	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.08
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
DUCK HARVEST (RETRIEVED KILL)	118,253	133,520	368,909	267,477	34,309	43,285	257,670	309,365
PERCENT CHANGE		+13%		-27%		+26%		+20%
SEASONAL DUCK HARVEST PER ADULT HUNTER	2.62	3.41	6.00	4.67	4.00	4.21	5.53	7.18
PERCENT CHANGE		+30%		-22%		+5%		+21%

GOOSE SPECIES COMPOSITION								
CANADA GOOSE	100.00%	98.10%	61.39%	77.51%	100.00%	84.72%	59.79%	62.64%
SNOW GOOSE	0.00	1.03	14.90	10.65	0.00	0.00	17.11	17.58
BLUE GOOSE	0.00	0.00	14.62	3.55	0.00	0.00	17.11	10.99
WHITE-FRONTED GOOSE	0.00	0.87	8.89	8.29	0.00	15.28	5.99	8.79
BRANT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER GEESE	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
GOOSE HARVEST (RETRIEVED KILL)	36,339	50,766	20,472	22,424	1,908	5,845	17,224	20,603
PERCENT CHANGE		+40%		+10%		+206%		+20%
SEASONAL GOOSE HARVEST PER ADULT HUNTER	0.82	1.11	0.46	0.57	0.45	0.40	0.64	0.82
PERCENT CHANGE		+35%		+24%		-11%		+29%
COOT HARVEST (RETRIEVED KILL)	1,859	2,041	3,338	3,961	326	1,499	4,557	3,191
PERCENT CHANGE		+10%		+19%		+360%		-30%
SEASONAL COOT HARVEST PER ADULT HUNTER	0.04	0.04	0.05	0.07	0.04	0.16	0.09	0.07
PERCENT CHANGE		+2%		+35%		+324%		-27%
TOTAL HUNTER DAYS	287,386	340,741	388,572	344,001	40,666	40,672	362,915	357,159
PERCENT CHANGE		+19%		-12%		0%		-2%
DAYS PER ADULT HUNTER	6.88	7.56	6.37	6.40	4.85	4.44	7.65	7.79
PERCENT CHANGE		+10%		+1%		-5%		+2%
TOTAL DUCK STAMPS SOLD	39,808	42,138	57,592	50,724	7,892	8,588	44,502	43,177
PERCENT CHANGE		+6%		-12%		+9%		-3%
PERCENT SOLD TO NON-HUNTERS	3.32%	1.50%	2.32%	2.41%	2.21%	1.72%	1.75%	2.24%
TOTAL ADULT HUNTERS (POTENTIAL)	38,486	41,536	56,256	49,502	7,718	8,440	43,705	42,210
PERCENT CHANGE		+8%		-12%		+9%		-3%
PERCENT ACTIVE ADULT HUNTERS	84.0%	83.4%	81.3%	79.2%	73.2%	72.8%	87.1%	85.9%
PERCENT SUCCESSFUL ADULT HUNTERS	56.2%	60.9%	62.6%	62.1%	57.6%	61.8%	72.0%	72.5%
SAMPLE SIZES								
DUCK WINGS	1,284	1,353	2,116	1,453	425	581	1,499	1,341
GOOSE TAILS	265	295	70	86	26	84	117	91
QUESTIONNAIRES	993	912	1,039	1,125	500	661	1,181	1,085

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TABLE C-9--PERCENTAGE SPECIES COMPOSITION OF WATERFOWL HARVESTED, TOTAL NUMBERS HARVESTED, AND ADULT HUNTER STATISTICS IN THE CENTRAL FLYWAY DURING THE 1977 AND 1978 HUNTING SEASONS--continued.

	NEW MEXICO[a]		NORTH DAKOTA		OKLAHOMA		SOUTH DAKOTA	
	1977	1978	1977	1978	1977	1978	1977	1978
DUCK SPECIES COMPOSITION								
MALLARD	25.91%	34.82%	48.30%	52.17%	30.81%	35.82%	38.70%	42.16%
DOMESTIC MALLARD	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BLACK DUCK	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00
BLACK X MALLARD	0.00	0.00	0.00	0.07	0.00	0.18	0.00	0.00
MOTTLED DUCK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GADWALL	9.35	6.93	15.48	15.37	14.95	19.23	19.81	14.71
AMERICAN WIGEON	5.89	10.77	7.00	4.00	9.97	10.62	7.39	5.30
GREEN-WINGED TEAL	25.77	18.56	8.71	4.82	18.00	14.37	14.17	8.30
BLUE-WINGED/CINNAMON TEAL	3.64	5.38	5.09	5.75	4.32	4.50	2.74	7.00
NORTHERN SHOVELER	3.51	4.98	3.39	4.25	2.92	2.02	2.30	6.96
PINTAIL	16.31	9.88	4.73	8.58	2.77	2.05	4.02	6.93
WOOD DUCK	0.00	0.12	0.35	0.31	3.32	3.40	1.66	0.37
REDHEAD	0.98	1.11	0.67	1.97	2.40	2.99	3.89	4.34
CANVASBACK	0.19	0.12	0.07	0.10	0.85	0.35	0.78	0.22
GREATER SCAUP	0.00	0.00	0.00	0.00	0.07	0.06	0.00	0.00
LESSER SCAUP	0.00	0.55	4.66	1.70	1.97	1.33	0.42	1.59
RING-NECKED DUCK	0.80	0.56	0.84	0.24	6.54	1.18	2.08	1.03
GOLDENEYES	1.19	1.96	0.00	0.00	0.26	0.34	0.24	0.04
BUFFLEHEAD	0.79	2.51	0.45	0.55	0.33	0.86	1.48	0.26
RUDDY DUCK	0.00	1.04	0.00	0.12	0.04	0.21	0.33	0.63
OLDSQUAW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EIDERS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCOTERS	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00
HOODED MERGANSERS	0.00	0.51	0.12	0.00	0.36	0.43	0.00	0.08
OTHER MERGANSERS	0.40	0.19	0.00	0.00	0.00	0.06	0.00	0.00
OTHER DUCKS	1.06	0.00	0.00	0.00	0.07	0.00	0.00	0.08
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
DUCK HARVEST (RETRIEVED KILL)	32,965	37,969	195,597	430,219	220,371	155,601	148,944	420,751
PERCENT CHANGE		+15%		+120%		-29%		+182%
SEASONAL DUCK HARVEST PER ADULT HUNTER	4.50	5.46	3.00	5.98	6.05	5.03	4.17	8.97
PERCENT CHANGE		+21%		+99%		-17%		+115%

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GOOSE SPECIES COMPOSITION								
CANADA GOOSE	13.10%	57.22%	23.65%	28.41%	60.65%	73.58%	40.40%	68.74%
SNOW GOOSE	84.51	41.92	46.47	49.67	19.42	17.80	22.55	17.31
BLUE GOOSE	1.64	0.00	26.89	21.56	13.64	4.34	34.63	11.06
WHITE-FRONTED GOOSE	0.00	0.86	3.00	0.37	6.25	4.28	2.42	2.85
BRANT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER GEESE[b]	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
GOOSE HARVEST (RETRIEVED KILL)	9,265	5,136	165,467	128,683	14,242	12,542	41,220	47,569
PERCENT CHANGE		-45%		-24%		-12%		+16%
SEASONAL GOOSE HARVEST PER ADULT HUNTER	0.74	0.67	2.72	1.80	0.39	0.41	1.15	1.08
PERCENT CHANGE		-10%		-34%		+7%		-5%
COOT HARVEST (RETRIEVED KILL)	262	1,075	2,503	8,776	5,883	2,147	2,060	11,259
PERCENT CHANGE		+310%		+251%		-64%		+447%
SEASONAL COOT HARVEST PER ADULT HUNTER	0.04	0.14	0.04	0.13	0.18	0.08	0.05	0.24
PERCENT CHANGE		+286%		+227%		-55%		+336%
TOTAL HUNTER DAYS	39,563	46,128	403,789	444,272	214,706	153,838	254,853	378,866
PERCENT CHANGE		+17%		+10%		-28%		+49%
DAYS PER ADULT HUNTER	5.54	6.03	6.70	6.85	6.61	5.80	6.51	8.21
PERCENT CHANGE		+9%		+3%		-12%		+19%
TOTAL DUCK STAMPS SOLD	6,766	7,321	57,035	60,147	30,256	25,642	34,783	43,415
PERCENT CHANGE		+8%		+5%		-15%		+25%
PERCENT SOLD TO NON-HUNTERS	2.70%	3.76%	2.67%	1.27%	1.11%	4.69%	2.36%	2.04%
TOTAL ADULT HUNTERS (POTENTIAL)	6,583	7,046	55,552	59,383	29,920	24,439	33,962	42,529
PERCENT CHANGE		+7%		+7%		-18%		+25%
PERCENT ACTIVE ADULT HUNTERS	78.2%	84.3%	85.6%	88.6%	81.9%	78.8%	83.4%	88.2%
PERCENT SUCCESSFUL ADULT HUNTERS	59.1%	67.7%	72.9%	77.9%	67.5%	60.4%	69.1%	81.1%
SAMPLE SIZES								
DUCK WINGS	497	1,127	979	1,240	1,877	1,414	549	1,859
GOOSE TAILS	88	112	733	538	86	66	125	208
QUESTIONNAIRES	515	720	761	1,574	807	819	707	1,336

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TABLE C-9. PERCENTAGE SPECIES COMPOSITION OF WATERFOWL HARVESTED, TOTAL NUMBERS HARVESTED, AND ADULT HUNTER STATISTICS IN THE CENTRAL FLYWAY DURING THE 1977 AND 1978 HUNTING SEASONS--continued.

	TEXAS		WYOMING[a]		CENTRAL FLYWAY TOTAL	
	1977	1978	1977	1978	1977	1978
DUCK SPECIES COMPOSITION						
MALLARD	15.33%	12.32%	63.17%	61.05%	32.37%	35.65%
DOMESTIC MALLARD	0.00	0.00	0.00	0.00	0.01	0.02
BLACK DUCK	0.00	0.00	0.00	0.00	0.01	0.00
BLACK X MALLARD	0.00	0.00	0.00	0.00	0.00	0.02
MOTTLED DUCK	4.68	4.43	0.00	0.00	2.04	1.68
GADWALL	9.13	8.56	5.02	5.54	9.83	10.41
AMERICAN WIGEON	5.34	9.24	6.57	9.15	8.37	7.08
GREEN-WINGED TEAL	22.80	24.04	15.83	8.68	19.24	15.40
BLUE-WINGED/CINNAMON TEAL	6.75	8.81	1.31	2.30	5.54	7.04
NORTHERN SHOVELER	4.55	5.43	0.08	1.84	3.30	4.36
PINTAIL	11.96	13.07	2.65	5.69	7.38	8.06
WOOD DUCK	3.64	5.25	0.00	0.00	2.73	2.68
REDHEAD	2.01	1.30	2.17	0.34	1.71	1.97
CANVASBACK	0.58	0.36	0.00	0.11	0.45	0.24
GREATER SCAUP	0.28	0.13	0.00	0.00	0.15	0.06
LESSER SCAUP	5.06	2.44	0.00	1.14	3.11	2.00
RING-NECKED DUCK	2.58	3.69	0.31	0.40	2.57	1.54
GOLDENEYES	0.15	0.13	2.10	2.70	0.24	0.29
BUFFLEHEAD	0.40	0.34	0.50	0.69	0.50	0.60
RUDDY DUCK	0.15	0.15	0.00	0.00	0.13	0.19
OLDSQUAW	0.00	0.00	0.00	0.00	0.00	0.00
EIDERS	0.00	0.00	0.00	0.00	0.00	0.00
SCOTERS	0.01	0.00	0.00	0.00	0.04	0.00
HOODED MERGANSERS	0.23	0.17	0.00	0.00	0.15	0.12
OTHER MERGANSERS	0.08	0.05	0.25	0.36	0.08	0.10
OTHER DUCKS	0.09	0.07	0.00	0.00	0.06	0.05
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00
DUCK HARVEST (RETRIEVED KILL)	1,015,502	1,123,067	42,251	47,935	2,439,569	2,969,153
PERCENT CHANGE		+10%		+13%		+22%
SEASONAL DUCK HARVEST PER ADULT HUNTER	7.48	8.29	4.24	4.60	5.51	6.61
PERCENT CHANGE		+11%		+8%		+20%

GOOSE SPECIES COMPOSITION						
CANADA GOOSE	13.78%	20.54%	100.00%	99.19%	30.87%	46.27%
SNOW GOOSE	43.62	36.96	0.00	0.00	37.37	30.51
BLUE GOOSE	22.92	14.98	0.00	0.00	22.15	13.05
WHITE-FRONTED GOOSE	19.57	27.52	0.00	0.81	9.55	10.18
BRANT	0.00	0.00	0.00	0.00	0.00	0.00
OTHER GEESE[b]	0.11	0.00	0.00	0.00	0.06	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00
GOOSE HARVEST (RETRIEVED KILL)	201,016	133,286	3,487	6,760	514,640	434,014
PERCENT CHANGE		-34%		+94%		-16%
SEASONAL GOOSE HARVEST PER ADULT HUNTER	1.43	0.95	0.41	0.54	1.18	0.99
PERCENT CHANGE		-34%		+33%		-17%
COOT HARVEST (RETRIEVED KILL)	19,660	21,546	411	291	40,859	55,786
PERCENT CHANGE		+10%		-29%		+37%
SEASONAL COOT HARVEST PER ADULT HUNTER	0.14	0.14	0.04	0.03	0.09	0.12
PERCENT CHANGE		+7%		-36%		+34%
TOTAL HUNTER DAYS	877,610	835,569	48,697	51,413	2,919,165	2,992,659
PERCENT CHANGE		-5%		+6%		+3%
DAYS PER ADULT HUNTER	6.10	5.68	5.43	5.21	6.51	6.57
PERCENT CHANGE		-7%		-4%		+1%
TOTAL DUCK STAMPS SOLD	136,774	140,207	8,463	9,231	423,671	430,550
PERCENT CHANGE		+3%		+9%		+2%
PERCENT SOLD TO NON-HUNTERS	3.08%	3.40%	2.23%	1.58%	2.57%	2.56%
TOTAL ADULT HUNTERS (POTENTIAL)	132,561	135,440	8,266	9,085	412,969	419,580
PERCENT CHANGE		+2%		+10%		+2%
PERCENT ACTIVE ADULT HUNTERS	81.9%	80.9%	80.1%	82.7%	82.9%	83.1%
PERCENT SUCCESSFUL ADULT HUNTERS	69.8%	67.4%	62.8%	67.1%	67.4%	69.0%
SAMPLE SIZES						
DUCK WINGS	6,558	4,407	624	946	16,408	15,721
GOOSE TAILS	874	459	29	95	2,413	2,034
QUESTIONNAIRES	1,940	2,099	641	592	9,084	10,923

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[a] Includes only that portion of the State lying within the Central Flyway.

[b] Ross' Goose.

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TABLE C-10--PERCENTAGE SPECIES COMPOSITION OF WATERFOWL HARVESTED, TOTAL NUMBERS HARVESTED, AND ADULT HUNTER STATISTICS IN THE PACIFIC FLYWAY DURING THE 1977 AND 1978 HUNTING SEASONS.

	ARIZONA		CALIFORNIA		COLORADO[a]		IDAHO	
	1977	1978	1977	1978	1977	1978	1977	1976
DUCK SPECIES COMPOSITION								
MALLARD	10.28%	16.00%	16.72%	15.85%	69.65%	74.29%	63.05%	66.75%
DOMESTIC MALLARD	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BLACK DUCK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BLACK X MALLARD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOTTLED DUCK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GADWALL	2.16	5.69	1.59	2.11	1.26	2.55	2.60	2.27
AMERICAN WIGEON	5.48	7.99	11.82	9.66	2.21	5.03	9.46	10.58
GREEN-WINGED TEAL	34.77	25.28	22.31	21.81	18.39	11.58	10.51	7.86
BLUE-WINGED/CINNAMON TEAL	11.32	2.90	3.26	3.50	2.18	0.92	2.17	0.62
NORTHERN SHOVELER	3.25	9.44	8.40	8.67	0.40	0.61	1.30	1.58
PINTAIL	15.12	13.48	25.56	32.10	0.36	1.65	4.73	4.76
WOOD DUCK	0.00	0.19	1.77	1.56	0.00	0.00	0.25	0.68
REDHEAD	3.39	2.56	0.51	0.44	0.18	0.24	0.66	0.66
CANVASBACK	0.07	1.08	1.63	0.76	0.18	0.00	0.30	0.08
GREATER SCAUP	0.30	0.09	1.66	0.12	0.36	0.00	0.00	0.00
LESSER SCAUP	0.91	1.50	1.98	0.82	0.00	0.14	0.12	0.41
RING-NECKED DUCK	5.23	3.72	0.64	0.82	0.00	0.65	0.28	0.13
GOLDENEYES	0.29	1.69	0.32	0.09	2.60	1.05	2.90	2.81
BUFFLEHEAD	1.09	2.86	0.42	0.46	0.36	0.47	0.56	0.26
RUDDY DUCK	5.54	4.75	0.47	0.70	0.00	0.00	0.31	0.17
OLDSQUAW	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00
EIDERS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCOTERS	0.00	0.00	0.46	0.22	0.00	0.00	0.00	0.00
HOODED MERGANSERS	0.00	0.09	0.00	0.07	0.00	0.00	0.15	0.05
OTHER MERGANSERS	0.00	0.68	0.04	0.16	1.87	0.82	0.61	0.33
OTHER DUCKS	0.33	0.00	0.03	0.05	0.00	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
DUCK HARVEST (RETRIEVED KILL)	55,486	62,740	1,373,451	1,857,146	27,589	43,674	223,461	331,107
PERCENT CHANGE		+13%		+35%		+59%		+48%
SEASONAL DUCK HARVEST PER ADULT HUNTER	5.39	5.25	10.79	15.19	4.58	5.33	5.63	8.02
PERCENT CHANGE		-3%		+41%		+16%		+42%

GOOSE SPECIES COMPOSITION								
CANADA GOOSE	73.60%	94.99%	25.51%	41.23%	0.00%	100.00%	100.00%	100.00%
SNOW GOOSE	17.67	5.01	46.56	25.32	0.00	0.00	0.00	0.00
BLUE GOOSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHITE-FRONTED GOOSE	8.73	0.00	20.10	30.76	0.00	0.00	0.00	0.00
BRANT	0.00	0.00	5.81	0.60	0.00	0.00	0.00	0.00
OTHER GEESE[b]	0.00	0.00	2.03	2.09	0.00	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	0.00	100.00	100.00	100.00
GOOSE HARVEST (RETRIEVED KILL)	1,721	2,235	167,044	112,865	0	1,268	23,785	37,405
PERCENT CHANGE		+30%		-32%		00024%		+57%
SEASONAL GOOSE HARVEST PER ADULT HUNTER	0.11	0.21	1.32	0.93	0.20	0.22	0.57	1.12
PERCENT CHANGE		+84%		-29%		+8%		+56%
COOT HARVEST (RETRIEVED KILL)	2,100	1,714	50,088	61,536	323	261	8,550	4,417
PERCENT CHANGE		-18%		+23%		-19%		-49%
SEASONAL COOT HARVEST PER ADULT HUNTER	0.19	0.14	0.38	0.48	0.06	0.04	0.23	0.11
PERCENT CHANGE		-26%		+27%		-23%		-52%
TOTAL HUNTER DAYS	54,603	61,934	1,041,052	1,029,278	27,380	34,785	233,432	287,152
PERCENT CHANGE		+13%		-1%		+27%		+23%
DAYS PER ADULT HUNTER	4.87	4.98	7.94	8.10	4.80	5.80	6.22	7.13
PERCENT CHANGE		+2%		+2%		+21%		+15%
TOTAL DUCK STAMPS SOLD	10,566	11,735	128,280	126,091	5,423	5,598	35,484	38,051
PERCENT CHANGE		+11%		-2%		+3%		+7%
PERCENT SOLD TO NON-HUNTERS	2.30%	2.49%	6.02%	7.31%	3.32%	1.50%	2.63%	2.69%
TOTAL ADULT HUNTERS (POTENTIAL)	10,315	11,443	120,558	116,874	5,243	5,516	34,551	37,027
PERCENT CHANGE		+11%		-3%		+5%		+7%
PERCENT ACTIVE ADULT HUNTERS	77.6%	78.1%	86.2%	87.4%	78.6%	83.1%	81.1%	81.9%
PERCENT SUCCESSFUL ADULT HUNTERS	59.3%	55.3%	71.7%	77.6%	60.2%	68.5%	66.1%	69.0%
SAMPLE SIZES								
DUCK WINGS	1,123	1,063	4,356	5,931	458	512	1,357	1,780
GOOSE TAILS	7	20	369	339	0	3	89	155
QUESTIONNAIRES	725	735	2,735	3,175	418	546	677	1,046

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TABLE C-10--PERCENTAGE SPECIES COMPOSITION OF WATERFOWL HARVESTED, TOTAL NUMBERS HARVESTED, AND ADULT HUNTER STATISTICS IN THE PACIFIC FLYWAY DURING THE 1977 AND 1978 HUNTING SEASONS--continued.

	MONTANA[a]		NEVADA		NEW MEXICO[a]		OREGON	
	1977	1978	1977	1978	1977	1978	1977	1978
DUCK SPECIES COMPOSITION								
MALLARD	64.84%	53.87%	20.92%	29.43%	36.68%	38.07%	37.91%	32.55%
DOMESTIC MALLARD	0.10	0.00	0.14	0.08	0.00	0.00	0.00	0.26
BLACK DUCK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BLACK X MALLARD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOTTLED DUCK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GADWALL	3.44	8.69	7.09	7.35	10.15	11.45	3.12	3.57
AMERICAN WIGEON	6.78	5.14	9.78	6.64	21.65	23.50	18.32	18.56
GREEN-WINGED TEAL	6.80	5.45	25.48	21.44	8.60	9.26	13.93	15.40
BLUE-WINGED/CINNAMON TEAL	1.28	3.73	5.42	1.86	0.00	1.84	0.80	0.23
NORTHERN SHOVELER	3.14	3.57	5.86	5.76	0.77	0.60	3.28	2.32
PINTAIL	5.39	9.49	16.53	15.87	0.77	1.21	12.78	16.81
WOOD DUCK	0.77	0.69	0.14	0.63	0.00	0.00	3.26	2.16
REDHEAD	0.84	1.09	2.26	4.35	1.84	1.21	0.45	0.53
CANVASBACK	0.68	1.21	0.71	2.66	1.45	0.60	0.65	1.25
GREATER SCAUP	0.00	0.16	0.14	0.00	0.00	0.00	0.71	0.24
LESSER SCAUP	3.52	2.29	1.27	0.82	0.00	0.60	0.57	1.41
RING-NECKED DUCK	0.16	0.88	1.13	0.85	2.74	1.21	0.79	1.70
GOLDENEYES	1.61	1.14	0.85	0.08	4.26	4.22	0.73	0.22
BUFFLEHEAD	0.32	1.61	0.71	1.13	1.16	5.03	1.84	2.20
RUDDY DUCK	0.00	0.36	0.99	0.63	0.00	0.00	0.39	0.17
OLDSQUAW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EIDERS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCOTERS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
HOODED MERGANSERS	0.16	0.10	0.00	0.14	0.00	0.00	0.07	0.25
OTHER MERGANSERS	0.16	0.26	0.57	0.28	6.41	1.21	0.37	0.00
OTHER DUCKS	0.00	0.07	0.00	0.00	3.52	0.00	0.00	0.05
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
DUCK HARVEST (RETRIEVED KILL)	139,617	143,698	76,858	88,457	4,553	11,320	361,787	505,746
PERCENT CHANGE		+3%		+15%		+149%		+40%
SEASONAL DUCK HARVEST PER ADULT HUNTER	6.27	6.36	6.07	7.54	2.84	11.39	6.36	9.28
PERCENT CHANGE		+2%		+24%		+301%		+46%

GOOSE SPECIES COMPOSITION								
CANADA GOOSE	85.68%	90.61%	85.37%	90.70%	0.00%	0.00%	96.40%	97.79%
SNOW GOOSE	8.02	9.39	14.63	9.30	0.00	0.00	2.40	0.00
BLUE GOOSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHITE-FRONTED GOOSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.21
BRANT	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.00
OTHER GEESE[b]	6.30	0.00	0.00	0.00	0.00	0.00	0.60	0.00
TOTAL	100.00	100.00	100.00	100.00	0.00	0.00	100.00	100.00
GOOSE HARVEST (RETRIEVED KILL)	6,281	8,639	4,319	6,463	0	0	45,518	66,616
PERCENT CHANGE		+4%		+50%		0%		+46%
SEASONAL GOOSE HARVEST PER ADULT HUNTER	0.40	0.39	0.42	0.56	0.26	0.08	0.79	1.21
PERCENT CHANGE		0%		+34%		-71%		+52%
COOT HARVEST (RETRIEVED KILL)	19,631	2,268	3,526	2,551	77	57	9,771	6,682
PERCENT CHANGE		-88%		-28%		-26%		-32%
SEASONAL COOT HARVEST PER ADULT HUNTER	0.84	0.10	0.33	0.20	0.07	0.05	0.16	0.12
PERCENT CHANGE		-88%		-34%		-22%		-29%
TOTAL HUNTER DAYS	127,240	135,805	69,134	68,805	4,657	8,261	377,530	397,544
PERCENT CHANGE		+7%		0%		+77%		+5%
DAYS PER ADULT HUNTER	5.45	5.83	5.83	5.32	4.20	7.80	6.36	6.96
PERCENT CHANGE		+7%		-9%		+86%		+10%
TOTAL DUCK STAMPS SOLD	21,966	21,813	11,145	12,154	1,048	1,012	56,224	54,847
PERCENT CHANGE		-1%		+9%		-3%		-2%
PERCENT SOLD TO NON-HUNTERS	2.21%	1.72%	2.12%	2.19%	2.70%	3.76%	2.80%	4.22%
TOTAL ADULT HUNTERS (POTENTIAL)	21,481	21,438	10,939	11,888	1,020	974	54,650	52,532
PERCENT CHANGE		0%		+9%		-5%		-4%
PERCENT ACTIVE ADULT HUNTERS	80.7%	81.7%	79.6%	78.0%	69.9%	84.3%	82.1%	84.1%
PERCENT SUCCESSFUL ADULT HUNTERS	67.3%	67.0%	61.8%	64.1%	44.5%	70.8%	64.0%	68.1%
SAMPLE SIZES								
DUCK WINGS	1,007	1,393	651	836	170	176	1,664	1,450
GOOSE TAILS	68	78	41	43	0	0	167	227
QUESTIONNAIRES	601	639	745	762	91	64	1,035	1,369

TABLE C-10--PERCENTAGE SPECIES COMPOSITION OF WATERFOWL HARVESTED, TOTAL NUMBERS HARVESTED, AND ADULT HUNTER STATISTICS IN THE PACIFIC FLYWAY DURING THE 1977 AND 1978 HUNTING SEASONS--continued.

	UTAH		WASHINGTON		WYOMING[a]		PACIFIC FLYWAY TOTAL	
	1977	1978	1977	1978	1977	1978	1977	1978
DUCK SPECIES COMPOSITION								
MALLARD	23.59%	33.33%	45.78%	54.11%	62.31%	63.83%	32.03%	31.84%
DOMESTIC MALLARD	0.00	0.00	0.05	0.03	0.00	0.00	0.03	0.04
BLACK DUCK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BLACK X MALLARD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOTTLED DUCK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GADWALL	10.38	10.26	0.77	1.54	6.12	2.56	2.82	3.36
AMERICAN WIGEON	6.92	4.53	14.85	11.00	5.62	8.15	12.10	10.35
GREEN-WINGED TEAL	17.98	18.56	14.98	13.59	9.92	14.75	18.29	17.64
BLUE-WINGED/CINNAMON TEAL	5.15	1.87	0.26	0.11	2.26	2.87	2.58	2.14
NORTHERN SHOVELER	4.59	2.88	2.68	1.72	0.00	2.05	5.43	5.40
PINTAIL	17.41	15.44	10.83	11.32	4.96	2.05	17.54	21.43
WOOD DUCK	0.00	0.37	0.14	0.24	0.00	0.00	1.25	1.17
REDHEAD	4.38	4.16	0.16	0.43	0.00	1.23	0.86	0.93
CANVASBACK	1.48	0.92	0.29	0.41	0.00	0.41	1.05	0.78
GREATER SCAUP	0.14	0.09	0.54	0.63	0.00	0.41	0.95	0.20
LESSER SCAUP	2.40	0.92	0.62	1.17	0.00	0.41	1.47	0.97
RING-NECKED DUCK	0.00	0.28	0.86	0.45	0.00	0.41	0.65	0.82
GOLDENEYES	1.06	3.61	0.82	0.66	6.61	0.82	0.82	0.80
BUFFLEHEAD	1.62	0.74	1.31	1.77	1.10	0.00	0.87	0.99
RUDDY DUCK	2.26	1.39	0.23	0.52	0.00	0.00	0.62	0.66
OLDSQUAW	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.02
EIDERS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCOTERS	0.07	0.00	0.14	0.10	0.00	0.00	0.24	0.13
HOODED MERGANSERS	0.07	0.00	0.43	0.03	0.00	0.00	0.11	0.08
OTHER MERGANSERS	0.49	0.64	0.24	0.08	1.10	0.00	0.24	0.21
OTHER DUCKS	0.00	0.00	0.03	0.05	0.00	0.00	0.03	0.04
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
DUCK HARVEST (RETRIEVED KILL)	242,276	337,671	565,420	577,852	10,016	15,743	3,084,514	3,975,354
PERCENT CHANGE		+39%		+1%		+57%		+29%
SEASONAL DUCK HARVEST PER ADULT HUNTER	6.30	8.83	8.05	7.96	5.12	5.60	7.95	10.31
PERCENT CHANGE		+40%		-1%		+9%		+30%

GOOSE SPECIES COMPOSITION								
CANADA GOOSE	94.52%	100.00%	96.11%	96.28%	100.00%	100.00%	58.53%	77.93%
SNOW GOOSE	4.11	0.00	0.78	1.33	0.00	0.00	25.86	9.53
BLUE GOOSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WHITE-FRONTED GOOSE	1.37	0.00	0.78	1.06	0.00	0.00	10.86	11.35
BRANT	0.00	0.00	2.33	1.33	0.00	0.00	3.43	0.46
OTHER GEESE[b]	0.00	0.00	0.00	0.00	0.00	0.00	1.32	0.73
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
GOOSE HARVEST (RETRIEVED KILL)	26,556	25,917	37,263	61,928	1,562	1,189	316,449	324,529
PERCENT CHANGE		-2%		+66%		-35%		+3%
SEASONAL GOOSE HARVEST PER ADULT HUNTER	0.69	0.68	0.52	0.80	0.42	0.47	0.82	0.86
PERCENT CHANGE		-2%		+54%		+12%		+5%
COOT HARVEST (RETRIEVED KILL)	8,390	14,841	10,252	5,931	135	123	112,883	100,381
PERCENT CHANGE		+77%		-42%		-9%		-11%
SEASONAL COOT HARVEST PER ADULT HUNTER	0.19	0.36	0.14	0.08	0.05	0.04	0.28	0.25
PERCENT CHANGE		+88%		-42%		-18%		-10%
TOTAL HUNTER DAYS	333,495	299,240	539,637	501,172	13,569	13,906	2,821,769	2,837,882
PERCENT CHANGE		-10%		-7%		+2%		+1%
DAYS PER ADULT HUNTER	7.64	7.30	7.31	6.81	5.16	4.81	7.03	7.14
PERCENT CHANGE		-4%		-7%		-7%		+2%
TOTAL DUCK STAMPS SOLD	40,319	38,051	70,261	69,210	2,479	2,700	383,155	381,302
PERCENT CHANGE		-6%		-1%		+9%		0%
PERCENT SOLD TO NON-HUNTERS	0.37%	1.02%	3.31%	2.23%	2.33%	1.58%	3.64%	4.05%
TOTAL ADULT HUNTERS (POTENTIAL)	40,170	37,702	67,935	67,667	2,421	2,657	369,253	365,716
PERCENT CHANGE		-6%		0%		+10%		-1%
PERCENT ACTIVE ADULT HUNTERS	88.8%	88.2%	83.7%	82.2%	78.6%	79.4%	84.0%	84.4%
PERCENT SUCCESSFUL ADULT HUNTERS	71.9%	73.6%	66.0%	68.3%	64.7%	62.0%	68.2%	71.3%
SAMPLE SIZES								
DUCK WINGS	1,417	1,098	3,251	3,689	171	196	15,625	18,124
GOOSE TAILS	73	100	255	370	27	11	1,095	1,346
QUESTIONNAIRES	651	638	1,300	1,546	146	216	9,124	10,736

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[a] Includes only that portion of the State lying within the Pacific Flyway.

[b] Ross' Goose.

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TABLE C-11-PERCENTAGE SPECIES COMPOSITION OF WATERFOWL HARVESTED, TOTAL NUMBERS HARVESTED, AND ADULT HUNTER STATISTICS IN ALASKA AND FOR THE ENTIRE UNITED STATES DURING THE 1977 AND 1978 HUNTING SEASONS.

	ALASKA		UNITED STATES TOTAL	
	1977	1978	1977	1978
DUCK SPECIES COMPOSITION				
MALLARD	29.71%	32.86%	33.17%	32.99%
DOMESTIC MALLARD	0.00	0.00	0.11	0.10
BLACK DUCK	0.00	0.00	2.04	2.20
BLACK X MALLARD	0.00	0.00	0.11	0.14
MOTTLED DUCK	0.00	0.00	0.60	0.76
GADWALL	0.65	0.47	5.48	6.36
AMERICAN WIGEON	11.00	13.06	6.66	6.86
GREEN-WINGED TEAL	15.71	14.68	13.84	13.00
BLUE-WINGED/CINNAMON TEAL	0.61	0.09	5.46	6.30
NORTHERN SHOVELER	5.41	4.16	2.86	3.49
PINTAIL	24.83	15.20	7.51	8.83
WOOD DUCK	0.00	0.00	7.62	8.31
REDHEAD	0.20	0.09	0.78	1.09
CANVASBACK	0.40	0.26	0.56	0.42
GREATER SCAUP	1.32	1.82	0.98	0.40
LESSER SCAUP	2.13	1.47	5.10	2.06
RING-NECKED DUCK	0.35	0.19	3.25	3.38
GOLDENEYES	3.73	3.58	0.57	0.65
BUFFLEHEAD	2.58	4.35	1.14	1.07
RUDDY DUCK	0.00	0.00	0.25	0.42
OLDSQUAW	0.50	1.29	0.07	0.06
EIDERS	0.15	0.00	0.11	0.10
SCOTERS	0.25	4.27	0.50	0.30
HOODED MERGANSERS	0.00	0.00	0.52	0.46
OTHER MERGANSERS	0.05	0.49	0.23	0.17
OTHER DUCKS	0.52	1.64	0.04	0.05
TOTAL	100.00	100.00	100.00	100.00
DUCK HARVEST (RETRIEVED KILL)	108,326	124,107	13,470,295	15,354,528
PERCENT CHANGE		+15%		+14%
SEASONAL DUCK HARVEST PER ADULT HUNTER	5.49	6.30	6.21	7.11
PERCENT CHANGE		+15%		+15%

GOOSE SPECIES COMPOSITION				
CANADA GOOSE	64.87%	64.42%	64.06%	70.95%
SNOW GOOSE	3.60	0.60	18.57	13.67
BLUE GOOSE	0.00	0.00	10.67	8.16
WHITE-FRONTED GOOSE	7.21	8.30	5.62	6.75
BRANT	11.71	5.33	0.73	0.16
OTHER GEESE[a]	12.61	21.35	0.36	0.31
TOTAL	100.00	100.00	100.00	100.00
GOOSE HARVEST (RETRIEVED KILL)	16,530	14,096	1,835,606	1,713,448
PERCENT CHANGE		-15%		-7%
SEASONAL GOOSE HARVEST PER ADULT HUNTER	0.86	0.73	0.86	0.80
PERCENT CHANGE		-16%		-7%
COOT HARVEST (RETRIEVED KILL)	438	573	492,217	641,680
PERCENT CHANGE		+31%		+30%
SEASONAL COOT HARVEST PER ADULT HUNTER	0.02	0.03	0.22	0.29
PERCENT CHANGE		+29%		+31%
TOTAL HUNTER DAYS	86,042	97,838	15,249,555	15,629,168
PERCENT CHANGE		+14%		+2%
DAYS PER ADULT HUNTER	4.18	4.72	6.87	7.07
PERCENT CHANGE		+13%		+3%
TOTAL DUCK STAMPS SOLD	19,253	19,689	2,132,940	2,131,756
PERCENT CHANGE		+2%		0%
PERCENT SOLD TO NON-HUNTERS	1.73%	3.08%	2.94%	3.35%
TOTAL ADULT HUNTERS (POTENTIAL)	18,920	19,083	2,070,201	2,060,455
PERCENT CHANGE		+1%		0%
PERCENT ACTIVE ADULT HUNTERS	70.0%	73.2%	85.1%	85.4%
PERCENT SUCCESSFUL ADULT HUNTERS	56.7%	58.8%	67.6%	69.7%
SAMPLE SIZES				
DUCK WINGS	1,647	1,565	72,398	71,816
GOOSE TAILS	222	163	8,553	7,239
QUESTIONNAIRES	1,192	1,491	42,119	49,451

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[a] Ross' goose in Central and Pacific Flyways; Emperor goose in Alaska.

Table C-12. Numbers of teal harvested (retrieved kill), with percent species composition, during the 1977 and 1978 September teal seasons.

	1977				1978			
Flyway/State	Numbers harvested	Percent green-winged teal	Percent blue-winged/cinnamon teal	Wings received	Numbers harvested	Percent green-winged teal	Percent blue-winged/cinnamon teal	Wings received
Mississippi Flyway								
Alabama	2,700	5.3	94.7	75	3,300	4.8	95.2	125
Arkansas	13,400	55.6	44.4	9	8,200	6.3	93.7	63
Illinois	16,600	21.8	78.2	78	24,000	11.4	88.6	132
Indiana	4,200	21.3	78.7	188	4,000	7.8	92.2	180
Kentucky	600		100.0	8	700	8.3	91.7	24
Louisiana	101,100	18.1	81.9	364	154,400	7.7	92.3	441
Mississippi	3,200	9.5	90.5	42	3,200	7.5	92.5	67
Missouri	11,500	12.0	88.0	50	14,100	7.6	92.4	131
Ohio	4,900	21.2	78.8	170	6,100	14.8	85.2	149
Tennessee	2,900		100.0	1	5,900	12.9	87.1	62
Total	161,200	20.6	79.4	985	224,000	8.3	91.7	1,374
Central Flyway								
Colorado	9,500	64.8	35.2	71	10,200	21.3	78.7	47
Kansas	32,600	25.8	74.2	221	24,500	11.5	88.5	183
New Mexico	1,800	55.6	44.4	36	2,100	30.1	69.9	143
Oklahoma	7,000	19.6	80.4	163	6,100	16.7	83.3	192
Texas	51,500	14.6	85.4	727	68,300	14.3	85.7	512
Total	102,400	23.9	76.1	1,218	111,200	14.7	85.3	1,077
United States total	263,600	21.9	78.1	2,203	335,200	10.4	89.6	2,451

A list of current *Special Scientific Report – Wildlife* follows.

225. Scalation of the American Alligator, by Charles A. Ross and Charles D. Roberts. 1979. 8 pp.

(Reports 226 and 227 are in one cover)

226. Waterfowl Status Report, 1975, compiled and edited by James R. Goldsberry, Sharon L. Rhoades, Lonnie D. Schroeder, and Morton M. Smith. 1980. 86 pp.
227. Waterfowl Status Report, 1976, compiled and edited by William W. Larned, Sharon L. Rhoades, and K. Duane Norman. 1980. 88 pp.
228. Effects of Environmental Contaminants on Reptiles: A Review, by Russell J. Hall. 1980. 12 pp.
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231. The Canada Goose (*Branta canadensis*) – An Annotated Bibliography, compiled by Scott R. Craven. 1981. 66 pp.
232. Metabolism of Pesticides: Update III, by Calvin M. Menzie. 1980. 709 pp.
233. Relative Attractiveness of Different Foods at Wild Bird Feeders, by Aelred D. Geis. 1980. 11 pp.
234. Establishment of Seeded Grasslands for Wildlife Habitat in the Prairie Pothole Region, by Harold F. Duebbert, Erling T. Jacobson, Kenneth E. Higgins, and Erling B. Podoll. 1981. 21 pp.
235. Bats and Environmental Contaminants: A Review, by Donald R. Clark, Jr. 1981. 27 pp.

(Reports 236 and 237 are in one cover)

236. Waterfowl Status Report, 1977, compiled and edited by Carey S. Smith, Sharon L. Rhoades, and K. Duane Norman. 1981. 88 pp.
237. Waterfowl Status Report, 1978, compiled and edited by Albert N. Novara, Sharon L. Rhoades, Betty I. Hodges, and K. Duane Norman. 1981. 96 pp.
238. Status Reports on Twelve Raptors, by David L. Evans. 1982. 68 pp.
239. Summary of Foreign Game Bird Liberations, 1969–78, by Richard C. Banks. 1981. 23 pp.
240. Reliability of Kill and Activity Estimates in the U.S. Waterfowl Hunter Survey, by Leigh M. Couling, A. R. Sen, and Elwood M. Martin. 1982. 14 pp.
241. Residues of DDT, Dieldrin, and Heptachlor in Earthworms During Two Years Following Application, by Charles D. Gish and Donald L. Hughes. 1982. 15 pp.
242. Changes in Vegetation Structure in Seeded Nesting Cover in the Prairie Pothole Region, by Kenneth F. Higgins and William T. Barker. 1982. 26 pp.
243. Bibliography of References to Avian Botulism: Update, by Sonoma S. Wilson and Louis N. Locke. 1982. 10 pp.
244. Technique for Structuring Wildlife Guilds to Evaluate Impacts on Wildlife Communities, by Henry L. Short and Kenneth P. Burnham. 1982. 34 pp.
245. Organochlorine Residues in Eggs of Alaskan Seabirds, by Harry M. Ohlendorf and others. 1982. 41 pp.

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